

**Original citation:**

Pascali, Luigi. (2016) Banks and development : Jewish communities in the Italian Renaissance and current economic performance. Review of Economics and Statistics, 98 (1). pp. 140-158.  
[http://dx.doi.org/10.1162/REST\\_a\\_00481](http://dx.doi.org/10.1162/REST_a_00481)

**Permanent WRAP URL:**

<http://wrap.warwick.ac.uk/81097>

**Copyright and reuse:**

The Warwick Research Archive Portal (WRAP) makes this work by researchers of the University of Warwick available open access under the following conditions. Copyright © and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable the material made available in WRAP has been checked for eligibility before being made available.

Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge. Provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

**Publisher's statement:**

This is an author's manuscript version of a paper that was accepted for publication in Review of Economics and Statistics.

<http://www.mitpressjournals.org/loi/rest>

**A note on versions:**

The version presented here may differ from the published version or, version of record, if you wish to cite this item you are advised to consult the publisher's version. Please see the 'permanent WRAP URL' above for details on accessing the published version and note that access may require a subscription.

For more information, please contact the WRAP Team at: [wrap@warwick.ac.uk](mailto:wrap@warwick.ac.uk)

# Banks and Development: Jewish Communities in the Italian Renaissance and Current Economic Performance\*

Luigi Pascali<sup>†</sup>

Universitat Pompeu Fabra and University of Warwick

June 12, 2014

## Abstract

Are differences in local banking development long lasting? Do they affect long-term economic performance? I answer these questions by relying on an historical development that occurred in Italian cities during the 15th century. A sudden change in Catholic doctrine drove the Jews toward money lending. Cities that were hosting Jewish communities developed complex banking institutions for two reasons: first, the Jews were the only people in Italy who were allowed to lend for a profit, and second, the Franciscan reaction to Jewish usury led to the creation of charity-lending institutions, the Monti di Pietà, that have survived until today and that became the basis of the Italian banking system. Using Jewish demography in 1500 as an instrument, I provide evidence of (1) extraordinary persistence in the level of banking development across Italian cities and (2) substantial effects of current local banking development on per-capita income. Additional firm-level analyses suggest that well-functioning local banks exert large effects on aggregate productivity by reallocating resources toward more efficient firms. I exploit the expulsion of Jews from the Spanish territories in Italy in 1541 to argue that my results are not driven by omitted institutional, cultural, or geographical characteristics. In particular, I show that the difference in current income between cities that hosted Jewish communities and those that did not is only observed in regions that were not Spanish territories during the 16th century.

**JEL:** O43, G21, O10

**Keywords:** Banks, Economic development, Persistence, Jewish demography.

## 1 Introduction

In recent years, an exciting economic literature has emerged that regards history as one of the main determinants of current economic development. Beginning with the seminal contributions of Acemoglu et al. (2001), Engerman and Sokoloff (1994), and La Porta et al. (1997), a significant body of empirical literature argues that

---

\*I would like to thank Alberto Alesina, James Anderson, Benjamin Braude, Susanto Basu, Matteo Cacciato, Antonio Ciccone, Donald Cox, Scott Fulford, Fabio Ghironi, Francesco Giavazzi, Matteo Iacoviello, Arthur Lewbel, Stelios Michalopoulos, Daniele Paserman, Fabio Schiantarelli, Shannon Seitz, Philip Strahan, Michael Toch, David Weil, Ivo Welch and the participants in seminars at Brown University, Boston College, Boston University, Clemson College, UC-Berkeley, Haas Business School, Harvard Business School, EIEF, INSPER, Santa Clara University, Simon Fraser University, Università di Napoli -Federico II, Bank of Italy, Collegio Carlo Alberto, London Business School, Pompeu Fabra University, Getulio Vargas Foundation- Sao Paulo, University of Warwick for very helpful comments. Finally, I thank CREMed for generous support, Elisa Giannone for excellent research assistance and Fondazione del Monte for the warm hospitality in their archives.

<sup>†</sup>Ramon Trias Fargas, 25, 08005 Barcelona; phone: (+34)935421190; fax: (+34)935421746; Luigi.Pascali@upf.edu.

historical events—and primarily colonization patterns—have had long-lasting effects on institutions<sup>1</sup>, culture<sup>2</sup>, human capital<sup>3</sup>, and technology<sup>4</sup> and, through those channels, ultimately on current domestic living conditions. In this paper, I document another unexplored channel through which history affects current economic development: the creation and evolution of banks.

The first question that this paper attempts to answer is whether the level of local banking development is persistent over time. This question is central to understanding the remarkable persistence in differences in economic development across countries and regions. Guiso et al. (2008) note that, among European countries, the correlation of per-capita income between the beginning and the end of the last century is 0.56. Italy is a typical example of persistent regional economic disparities: the literature on the so-called “*questione meridionale*”, the social and economic backwardness of Southern Italy, dates back to the end of the nineteenth century. More generally, the correlation of per-capita income of Italian regions between 1891 and 2001 is 0.62<sup>5</sup>.

In this paper, I argue that this correlation can be partially explained by longevous local banks. In particular, I highlight the extraordinary persistence of the disparities in local banking development across Italian municipalities over the last four centuries. For instance, cities that hosted Catholic money-lending institutions in the second half of the sixteenth century continue to have a significantly higher number of bank branches per capita and greater credit availability for the private sector today than those that did not. To isolate a causality channel, I first research the history of Italian banks and argue that Jewish demography in the early Renaissance exerted a substantial influence on the development of local credit markets.

My argument rests on the following premises:

(1) Jews arrived in Rome during the Roman Empire owing to a mass deportation following the Roman Empire’s victory over the Judean rebels. Because of commercial reasons, temporary expulsions from Rome, and, particularly, deportation as slaves, the Jewish residents spread from Rome to the rest of Italy. For centuries, their religion prevented them from acquiring economic and social prominence in Italy. However, at the end of the fourteenth century, a sudden change in Catholic doctrine prohibited the Catholics from lending for a profit but still allowed the Jews to do so.

(2) Cities that hosted a Jewish community developed complex credit markets. These markets developed

---

<sup>1</sup>Studies on the effects of history on long-lasting institutions build on an earlier body of literature dating back to North and Thomas (1973), North (1981), and North (1990). For a complete review, see Nunn (2009).

<sup>2</sup>See, for instance, Alesina and La Ferrara (2005) on the effects of cultural and religious fragmentation on long-run growth; Alesina et al. (2013) on the effects of the use of the plough on contemporaneous gender roles; and Nunn and Wantchekon (2011) on the effects of the slave trade on trust and contemporaneous growth. Extensive research on Italy has studied the origins of social trust and its effect on economic development (see, for instance, Banfield (1958), Putnam (1993), Guiso et al. (2008), and Durante (2009)).

<sup>3</sup>See Botticini and Eckstein (2007) on the effects of changing religious norms on literacy.

<sup>4</sup>Spolaore and Wacziarg (2009) assess the effects of genetic distance on technology diffusion and development. Comin and Gong (2010) document the importance of early technology adoption on current economic performance.

<sup>5</sup>This result is based on estimates obtained by Felice (2005) on the value added produced in Italian regions in 1891.

for two reasons. First, Jewish communities specialized in the money-lending business. Second, Franciscan propaganda against usury, which was particularly ferocious during the fifteenth century, led to the creation of charitable loan banks, called Monti di Pietà, that were intended to drive the Jews out of the local financial market. The Monti di Pietà were created in cities in which the Jewish minority was most influential.

(3) While Jewish pawnshops disappeared, the Monti have survived to the present day and gave rise to a significant portion of contemporary Italian banks.

Consider, for example, the cities of Ivrea and Chivasso. These two cities have similar demographic histories<sup>6</sup> and shared the same rulers for at least eight centuries<sup>7</sup>. Today, they share the same legislators and courts because they both belong to the province of Turin. However, Ivrea hosted a Jewish community in 1500 (tourists can still visit an ancient Jewish cemetery and a synagogue), while Chivasso did not. In 1591, a Monte di Pietà was created in Ivrea, motivated by the need to protect the Catholic masses from Jewish usury. Although the Jewish community disappeared at least a century ago, the Monte operated as the primary lending institution in the city until 1984. Ivrea still has a greater private credit-to-GDP ratio (98 percent versus 42 percent) and number of bank branches per resident (0.001 versus 0.0006) than Chivasso.

To conduct the analysis in a more systematic manner, I identify Italian cities that had at least five thousand citizens before the Italian unification in 1861 (excluding the islands). For those cities, I reconstruct the approximate size of the Jewish population in 1500 and collect data on the local banks beginning in 1470 (the year of incorporation of the first Monte) until 1570. Then, using the Jewish demography in 1500 as an exogenous source of variation, I document the persistence of these local banks until the present.

The exclusion restriction implied by my instrumental variable regression is that (1) conditional on the controls included in the regression, Jewish demography five centuries ago has had no effect on contemporary banks other than through its effect on local credit markets during the Renaissance and that (2) no unobservables are systematically correlated with Jewish demography five centuries ago and contemporary local banks. As I show in greater detail in the next section, the Jews in Italy were a very small minority, segregated from the rest of the Italian population and living almost exclusively off revenues from money-lending activities. Nevertheless, if a locational advantage (not captured by the controls) led the Jews to settle in a particular city and, simultaneously, affected current local banking development, then my instrument will be inappropriate. Particular geographic, cultural, institutional, and economic characteristics very likely attracted the Jews to select certain cities rather than others in 1500. To exclude the possibility that these characteristics may

---

<sup>6</sup>According to Malanima, they had fewer than 5 thousands residents until the early 19th century. According to the first Italian census, in 1861, Ivrea had approximately 6 thousands residents, and Chivasso a few hundred fewer. Today, Ivrea has 23,714 residents, while Chivasso has 23,649.

<sup>7</sup>During the 13th century, they were both under the rule of Emperor Frederick II, who assigned them to the Marques of Monferrato. In the 14th century, they came under the rule of House of Savoy where they remained until the unification of Italy.

have any direct effect on current local banks, I use a difference-in-difference approach based on an historical counterfactual. Between 1504 and 1541, Jews were completely expelled from the Kingdom of Naples, to which they would not be allowed to return for three centuries. This event is exogenous with respect to the Italian social and economic situation of that period. This event was, in fact, the result of the attitude of the Spanish crown toward the Jews: the edict was promulgated in Spain in 1493; in 1503, a large part of Italy fell, for dynastic reasons, under the Spanish crown, and the edict of expulsion also applied in these areas. I establish that, once a set of observed geographical characteristics are controlled for, no within-province difference in the level of current economic development (or local banking development) exists between those municipalities that previously hosted Jewish communities and those that did not in the areas that were once part of the Kingdom of Naples. However, large within-province differences are observed in those areas from which Jews were not expelled: in these areas, cities that formerly hosted Jewish communities currently have larger per-capita GDP (and credit-to-GDP ratios). I interpret this result to indicate that no unobservables affect both the presence of Jewish communities in 1500 and contemporary local banking and economic development.

Having established the validity of my instrument, I can use it to estimate the persistence of credit institutions. The results are surprising: having hosted a Monte di Pietà during the Renaissance results in a current increase in credit availability to the private sector (as a percentage of GDP) of at least 80 percent and an increase in branch density of 24 percent.

The second central question that this paper attempts to answer is whether banks affect long-term economic performance. Economic theory is divided on this topic. A large body of literature dating back to Schumpeter emphasizes the positive influence of the development of a country's financial sector on the level and rate of growth in its per-capita income. The main argument is that financial intermediaries reduce the cost of acquiring information and allow for improved assessment, selection, and monitoring of investment projects. For example, in Greenwood and Jovanovic (1989), the ability of financial intermediaries to improve information collection results in an increase in the efficiency of resource allocation and, hence, in economic performance<sup>8</sup>. However, according to certain theoretical contributions (for example, Bencivenga and Smith (1991); King and Levine (1993b)), an improvement in the reallocation of resources that results in an increase in the return to savings may actually depress saving rates and compromise future economic growth. Because the theoretical literature is divided, elucidating the effect of finance on development remains the task of the empirical literature. In the 1990s, beginning with studies by King and Levine (1993a, 1993b), a new body of empirical evidence began to indicate that a positive relationship exists between the level of development achieved by the banking system and economic performance, at both the national and regional levels. Italy represents a favorable "laboratory"

---

<sup>8</sup>See also Diamond (1996).

for such empirical studies<sup>9</sup> for two reasons. First, focusing on Italy allows researchers to isolate the role of banks in fostering economic performance. The Italian financial system can be characterized as bank based. The capitalization of the Italian stock market is low compared with that of most other developed countries, and Italian firms have traditionally used debt rather than equity to finance their activities. Therefore, banking development is likely particularly important for Italian firms. Second, considerable spatial diversity exists in the degree of banking development. Until 1999, competition among Italian banks was dampened by restrictions on lending and branching across geographical areas. As a result, fundamental differences developed between the local credit markets of Italian cities. A possible objection to the use of Italy for this purpose is that local credit market conditions are irrelevant as long as individuals and firms can access markets other than the local market. However, a growing body of literature shows that distance affects the provision of funds, especially for small firms (Petersen and Rajan (2002); Bofondi and Gobbi (2004); Lerner (1995)). Moreover, bankers also regard distance as an important barrier to lending. As Guiso et al. (2004) report, "the president of the Italian Association of Bankers (ABI) declared in a conference that the banker's rule of thumb is to never lend to a client located more than three miles from his office".

Although a substantial body of empirical literature demonstrates that a strong correlation exists between banks and development, assessing the direction of causality has proved to be a difficult task<sup>10</sup>. There is little

---

<sup>9</sup>Lucchetti et al. (2001) examine the effect of local banks' efficiency on regional economic development. Angelini and Cetorelli (2003) study the effects of regulatory reforms on bank mark-ups. Bonaccorsi di Patti and Dell'Ariccia (2004) focus on firm creation. Guiso et al. (2004) present evidence of the effect of local financial development on a wide set of outcomes, such as business formation, firm entry, and growth. Guiso et al. (2006) study the effect of banking regulation on the cost of and access to credit. Alessandrini et al. (2009) present evidence that greater branch density reduces the probability that firms are financially constrained. Benfratello et al. (2008) concentrate on the effects of branch density on the probability that firms engage in R&D.

<sup>10</sup>Four different approaches have been adopted in this literature.

In a successful contribution, King and Levine (1993a) show that, on a cross-country basis, the predetermined component of financial development is a good predictor of growth over the following 10 to 30 years. However, skeptics offer two arguments against the use of this methodology for analyzing causality. First, an omitted variable, such as the propensity of households to save, may drive both financial development and economic development. Second, a reverse causality may be a problem with this methodology, as the typical measures of financial development (stock market capitalization and the availability of credit to the private sector) may respond to expected future growth.

The second approach seeks to rule out omitted country-level factors by focusing on interaction effects rather than the primary effects of financial development. On a cross-country basis, using industry-level data, Rajan and Zingales (1998) test the hypothesis that financial development should disproportionately assist industries that are relatively more dependent on external finance for their growth. As a proxy for a certain industry's need for external financing, the authors use data on the difference between investments and cash flows in the analogous industry in the US. The main problem with this approach is that the results are difficult to interpret without the following assumptions: all countries share the same technologies and perform the same tasks within each industry and capital markets in the US are perfect.

The third approach focuses on the time-series dimension and studies the effect of one-time exogenous financial liberalization. For example, at the US state level, Jayaratne and Strahan (1996) find that economic growth increases in states that relax intrastate bank branching restrictions. However, according to Fry (1995), the simultaneity of reforms appears to be binding for this type of study: "Most clear-cut cases of financial liberalization were accompanied by other economic reforms (such as fiscal, international trade and foreign exchange reforms). In such cases it is virtually impossible to isolate the effects of financial components of the reform package".

The final widely applied approach in the literature is the instrumental variable approach. Many authors have used GMM estimators developed for panel data where the instruments come from the lagged values of a financial development proxy. Levine et al. (2000) use data on a panel of 77 countries over the 1960-1995 period. The primary advantage of this methodology is that it controls for cross-sectional fixed effects. However, the procedure is data intensive, and researchers cannot generally rely on long time series. As Levine (2005) notes: "Levine et al. (2000) employ data averaged over a five-year period, yet models we are using to interpret data are typically models of steady state growth. To the extent that five years do not adequately proxy for long-

agreement on what determines banking institutions, making it difficult to isolate exogenous sources of variation and estimate their effects on performance.

Using Jewish demography in 1500 as an instrument, I find that an increase in the current credit availability of 1 percent increases GDP per capita in Italian municipalities by at least 0.18 percent. The effect of branch density is even stronger: an increase in the ratio of bank branches to total residents of 1 percent increases per-capita GDP by at least 0.7 percent. In other words, if a bank "fell from the sky" in a city characterized by the average branch density and one hundred thousand residents, local GDP per capita would be expected to increase by 2.8 percent. These estimates support the view that credit institutions have strong positive effects on economic development. Interestingly, at least 11 percent of the North-South gap in per-capita GDP is attributable to lower current credit availability, which is due to the expulsion of Jews.

In the last section of the paper, I illuminate a particular channel through which the improvement of credit institutions affects economic development. The so-called "Schumpeterian view" in the literature on finance and growth is based on the notion that banking institutions affect economic performance through their ability to foster aggregate productivity (e.g., the total output produced by the economy for a given set of inputs) rather than capital accumulation. My results validate this view. An increase in credit availability of 1 percent increases aggregate productivity by at least 0.05 percent (0.5 percent for branch density). Moreover, I show that banks affect aggregate productivity through the reallocation of resources toward more productive firms rather than through an increase in average firm productivity. This finding appears to validate theories emphasizing the importance of the role of the banks in exploiting ex ante information on investment opportunities to select the most promising investments.

This paper is organized as follows. Section 2 presents historical background information on Italian Jewish communities and the origins of Italian banks. Section 3 highlights the long-term effects of Jewish demography in 1500 on per-capita income in Italian cities. Section 4 documents (1) the effects of current banks on per-capita GDP and (2) the persistence of the relative levels of local banking development across Italian municipalities over the last five centuries. Section 5 examines the effect of local banks on firm productivity. Some concluding remarks close the paper.

---

run relationship, the panel methods may imprecisely assess the finance growth link". To overcome this problem, researchers have searched for "external" instruments that can explain cross-sectional differences in financial development without requiring long time series of data. Levine (1998), Levine (1999), and Levine et al. (2000) use the La Porta et al. (1998) measures of a country's legal origins as instruments for current financial development. This type of analysis has three important drawbacks. First, excluding the possibility that these instruments affected not only financial institutions but also other institutions is difficult. For example, the legal origins of a country affect local contractual institutions. Second, it is difficult to rule out missing geomorphological variables that could drive both the instrumental and instrumented variables. Third, these studies are generally based on a limited number of observations.

## 2 The Jews in Italy and the Rise of the Monti di Pietà

Jews were already present in Italy in the second century BCE<sup>11</sup>. The first large communities were the result of mass deportations after the Jewish struggle and defeat in Judea at the hands of the Roman Empire<sup>12</sup>. Bonfil (1991) describes the Jewish communities' role in the Roman society accordingly:

“The fact that the Jews in Italy were of petty bourgeois or even servile origin and that they were not infrequently suspected of opposing Roman policy abroad prevented individual Jews from attaining prominence in economic or social life. [...] They engaged in humble occupations and lived in the proletarian sections. Cultural standards were not high, although there were painters, actors, and poets.”

Estimates indicate that approximately fifty thousand Jews lived in Italy during the first century. Because of commercial reasons, temporary expulsions from Rome and, particularly, deportation as slaves, the Jews spread from Rome to the rest of Italy. Whenever possible, they established themselves in more cosmopolitan cities where the local population was more tolerant of their religious convictions and customs. For these reasons, Jewish communities were concentrated in cities with important ports or where commerce was a prominent activity (Milano (1963), p. 29).

Even after the fall of the Roman Empire, the strong opposition of the Christian Church confined the Jews to the margins of Italian society. According to Bonfil, until the end of the 13th century, Jews remained part of the petty bourgeoisie and were primarily artisans (especially dyers and silk weavers) and small merchants. Typically, they owned houses in towns, but occasionally, some Jews also engaged in farming<sup>13</sup>.

This situation changed dramatically in the 14th century. During this period, Jews in Italy engaged in a new sphere of economic activity as moneylenders. Three primary motivations drove the Jews toward lending. First, during the Middle Ages, the Catholic Church, through several Ecclesiastical Councils, banned the practice of lending to earn a profit<sup>14</sup>. This prohibition, which had previously been limited to the Catholic clergy, was

---

<sup>11</sup>The first evidence of a Jewish presence in Italy dates back to 168 BCE. A Jewish general, Maccabees, was leading the struggle to free Palestine from Syrian domination and sent an embassy to Rome asking for military support.

<sup>12</sup>The first large wave of Jewish prisoners arrived in Italy in 61 BCE after Pompey and the Roman Empire's legions had subjugated Judea and conquered Jerusalem. In 66 CE, Judea rebelled against the invaders: the war lasted for four years and resulted in the complete defeat of the Jews. Again, a large portion of the Jewish prisoners were brought to Italy. According to later sources, 1500 Jewish prisoners arrived in Rome alone, and 5000, in Apulia. The last mass deportation of Jewish prisoners in Italy dates back to 134, when the Jewish struggle against the Romans resulted in the wholesale destruction of Jerusalem and more than one thousand other Jewish towns.

<sup>13</sup>In the middle of the thirteenth century, Saint Thomas Aquinas wrote that, unlike in other countries, Jews in Italy earned their livelihoods through their own work and not moneylending.

<sup>14</sup>The Christian prohibition against lending for a profit traces its origins to the ancient world and is inspired by two principles. First, the Aristotelian maxim “*Pecunia pecuniam parere non potest* (money cannot beget money)” excluded the possibility that investing to obtain future profit could be beneficial for society. Second, lending for a profit was considered at odds with the principle “*Mutuum date nihil inde sperantes* (give without hoping to receive anything in return)”, enunciated in the Gospel according to Saint Luke.



extended to the Catholic laity. Moreover, the Lateran Council of 1215, having forbidden Jews from lending at high and immoderate interest rates, silently allowed them to lend at normal interest rates. Second, between 1260 and 1340, the Italian peninsula experienced a strong expansion of merchant and craft guilds (Morelli (2008)). These organizations acquired complete control over the primary economic activities in the largest Italian cities. Because membership required adherence to Catholicism, a large number of Jews were forced to leave their traditional occupations. Third, some Jews in Central Italy who had engaged in trade during the Middle Ages had accumulated sizable fortunes and had both the capital and expertise to become moneylenders<sup>15</sup>.

Although the ban on Catholic usury did not prevent the rise of a new class of Catholic merchant bankers<sup>16</sup>, for more than a century the Jews enjoyed a monopoly in lending to the poor and the middle class. By the beginning of the 15th century, the geographic expansion of Jewish lending was complete and had become a general economic phenomenon in all parts of Italy. According to Shulvass (1973), Italian Jews during this period primarily derived their livelihoods from usury, pawnshops, and lending<sup>17</sup>. Italian town governments generally protected the expansion of Jewish lending because Jewish lenders represented an important source of public revenues<sup>18</sup>. Thus, several Jewish bankers were able to accumulate small fortunes. A number of Jews adopted the manners of the gentile upper class, with a taste for arts and letters; this period is remembered as one of unprecedented prosperity for Italian Jewry. These achievements, however, were undermined by two factors.

The first was the attitude of the Spanish Crown of Aragon toward its Jewish subjects. In March 1492, the Aragonese crown promulgated an edict expelling the Jews from its territories. At that time, Sicily and

---

<sup>15</sup>An old thesis, dating back to Jewish historian Cecile Roth, claims that the selection of Jews into moneylending primarily resulted from restrictions on landownership. Because of these restrictions, Jews abandoned farming and adopted the most profitable profession in urban areas. This thesis, however, has been disputed by a recent historiographic account (see Botticini and Eckstein 2007).

<sup>16</sup>Merchant banks originated in the Middle Ages, when Italian merchant houses—generally small, family-owned, import-export and commodity-trading businesses—began to use their excess capital to finance foreign trade in return for a share of the profits. Beginning in the 14th century, they extended their business to financing governments and the currency exchange market. In particular, the Medici bank in Florence emerged as a merchant-banking powerhouse. At the crux of the success of this bank was the system of bills of exchange that was used to exchange different types of currency. The process of a bill of exchange involved the exchange of money between different branches of the Medici bank, over the course of several months. The change in exchange rates at various locations over the length of time that it took to travel with the money allowed the Medici bank to make a profit without charging interest.

<sup>17</sup>In 1320, Kalonymos ben Kalonymos (1286-1328 CE), a Spanish Jewish philosopher, wrote in his *Maseket Purim*: “no usurious loans are to take place on Purim that is in the land of Israel, but it is permitted in Babylonia and in Greek Italy [...]. Jews of Babylonia and Italy have nothing else but usury upon which to rely [for their support]”. Two centuries later, Jehiel Nisim da Pisa (1507-1574 CE), a wealthy Italian Jewish banker, also attested that “in these lands [Italy] more than everywhere else in the entire Diaspora has the custom of lending to non-Jew become widespread”. Famous rabbis were also moneylenders and, according to Sonne (1948), most Northern Italian rabbis were bankers, even when they served as the heads of rabbinical schools. Leon da Modena (1638) charged that “in our generation all interest lenders are regarded honorable and not only are they not ineligible to testify and to judge, it is quite the reverse, namely, their word is as reliable as a hundred of witnesses, they are our leaders and judges”.

<sup>18</sup>Most Italian governments regulated Jewish lending in their domains through the mechanism of the *condotta*, a bilateral contract between the town government and Jewish lenders. Jewish lenders were allowed to engage in this activity in exchange for an annual tax and the promise to lend (occasionally at favorable terms) to the city government. The charters also regulated the interest-rate ceiling: in many instances, these ceilings were raised to tax the extra rent Jews realized on their loans (Botticini 2000).

Sardinia were under Aragonese rule, and thus, the edict also applied there. Then, in 1503, the Kingdom of Naples (which included all of Southern Italy, the region of Abruzzi and some cities close to Rome)<sup>19</sup> came under the Aragonese crown, and the Jews were expelled from these territories. Opposition to the edict by both the Christian masses and the local aristocracy led to certain exceptions. In particular, approximately 200 wealthy families were formally permitted to remain. However, in 1541, these exceptions were abrogated, and the law excluding Jews from the kingdom remained in force for over three centuries. In 1535, the Duchy of Milan also came under the Spanish rule<sup>20</sup>. The expulsion of the Jews from the Duchy was ordered in 1590 and executed in 1597. In 1683, the Jews were invited to return, but very few families did so.

Meanwhile, the Christian populations of other Italian states voiced increasing opposition to Jewish lending. According to Shulvass,

“The economic depression of the masses caused by endless wars waged throughout all of Italy, contrasted with a rise in the living standard of Jewish pawnbrokers, aroused strong anti-Jewish feelings. The movement was led by the Franciscans, who during this period had a number of outstanding itinerant preachers with tremendous influence upon the masses. [...] They believed that the abolition of the Jewish loan business would heal all social ills. The masses also believed that the loan business was ruining the country.”

With the explicit intention of keeping Christians in need of loans away from Jewish moneylenders, Franciscan leaders such as Bernardino da Siena, Giacomo della Marca, Giovanni da Capistrano, and Bernardino da Feltre laid the foundations for the Monti di Pietà, lending institutions sponsored by wealthy Christians that would extend credit on a nonprofit basis.

The creation of a Monte di Pietà followed a usual scheme, which is well described by Attilio Milano (1963, p. 74). A Franciscan preacher would arrive in town and offer several sermons to the largest audience possible, proclaiming that the current misfortune of the townspeople was divine retribution for the continued presence of Jewish usury; to appease God’s wrath, usury should be eliminated<sup>21</sup>. An expiatory procession would follow, during which each member of the community was expected to contribute to the formation of the initial capital

<sup>19</sup> A detailed map of the Italian states in 1500 can be found in the online appendix (Figure A.1)

<sup>20</sup> The Spaniards de facto held the Duchy of Milan from 1535 when the duke Francesco II Sforza died without heirs. The French crown claimed the duchy until 1559, when the possession was finally recognized as Spanish by the Treaty of Cateau-Cambresis.

<sup>21</sup> One of the main Franciscan preachers of that time, Bernardino da Siena, depicted Jewish lenders as bloodsuckers. In his sermon 43 on usury, he states: "It is usually the case that when wealth and money are concentrated into fewer and fewer hands and purses, it is a sign of the deteriorating state of the city and the land. This is similar to when the natural warmth of the body abandons the extremities and concentrates only in the heart and the internal organs; this is seen as the clearest indication that life is slipping away and that the person is soon to die. And if this concentration of wealth in the hands of the few is dangerous to the health of the city, it is even more dangerous when this wealth and money is concentrated and gathered into the hands of the Jews. For in that case, the natural warmth of the city—for this is what its wealth represents—is not flowing back to the heart to give it assistance but instead rushes to an abscess in a deadly hemorrhage, since all Jews, especially those who are moneylenders, are the chief enemies of all Christians."

of the Monte, typically in exchange for a plenary indulgence. Finally, the Franciscan preacher would assist the local authorities in drafting the charter for the Monte<sup>22</sup>.

Several anecdotes regarding the creation of the Monti have survived to the present day. For example, according to his biographer, in 1470, Bernardino da Feltre arrived in L'Aquila, a town in Abruzzi, and offered 82 sermons instigating the inhabitants to create a Monte and kill the Jewish minority<sup>23</sup>. Two weeks later, several processions and turbulent demonstrations by the population led the city council to authorize the creation of a Monte di Pietà. Its statute clearly indicates that the Monte was created with the mandate to “refrenare la insatiabile voragine della usura de Judey, la quale devora et consume li beni temporali dell’omini et persone de essa magnifica cita dell’Aquila e so contato” (to stop the insatiable bottomless chasm of Jewish usury, which devours and consumes all the goods owned by the people of the magnificent city of L'Aquila and its county). Several days after the establishment of the Monte, the Jews were expelled from the city (although they would be invited to return two years later).

The connection between the creation of the Monte di Pietà and this anti-Jewish propaganda left traces in the statutes of the great majority of the Monti di Pietà that were created before the beginning of the 18th century<sup>24</sup>.

Numerous papers from both historians and economists on the relationship between Jewish demography and the rise of the Monti di Pietà during the Italian Renaissance exist in the literature<sup>25</sup>. The mainstream historical perspective can be summarized by the words of Segre (1978):

“The mounts rise where there are Jewish bankers and their reason of being and their fuel is the opposition to the Jewish bankers and, sometimes their destruction under an overwhelming public pressure”.

In the words of Menning (1993):

---

<sup>22</sup>The online appendix includes a reproduction of a painting by Sebald Popp, “The sermon of the pious Giovanni da Capestrano in Norimberga” (Figure A.2). The painting dates back to 1493 and describes a typical Franciscan predication. You can identify a Franciscan preacher giving a sermon, the women piling up their best clothes and jewels in front of the preacher (the mount of piety originally referred to a pile of objects collected for redistribution to the poor), and, on the upper left of the representation, a Jew being arrested by the local authorities.

<sup>23</sup>“fin che gl’ebrei non fosser da gl’Aquilani tagliati a pezzi” (until the Jews have been cut into pieces by the inhabitants).

<sup>24</sup>For example, you can find references to Jewish usury in the founding statutes of the following lending institutions: Monte di Pietà di Viterbo (1472): “una losca nidiata di ebrei” (sinister brood of Jews); Monte di Pietà di Parma (1491): “ad evitare le voragine de le usure de zudei per subventionone dei poveri christiani” (to avoid the bottomless chasm of Jewish usury by subsidizing the poor people); Monte di Pietà di Parma (1491): “alla iattatura delle usure et massime delli zudi” (to the damnation of usury and, especially, the Jewish one); Monte di Pietà di Rieti (1489): “succatori del sangue de li cristiani” (suckers of Christian blood); Monte di Pietà di Cuneo (1557): “voragine dell’usura di ebrei”; Monte di Pietà di Casale (1557): “ai giudei che devorano il sangue de poveri” (to the Jews that devour the poor’s blood); Monte di Pietà di Savigliano (1602): “ingorda tirannia degli usurai ebrei” (gluttonous tyranny of Jewish usurers).

<sup>25</sup>Montanari (1999) offers an excellent collection of studies on the relationship between Jewish demography and the rise of the Monti di Pietà.

"As brokers of small loans against pawns, Italian Monti di Pietà were expected not only to replace Jewish moneylenders but also to set up the conditions in which all Jews could be expelled."

Between 1470 and 1570, the Franciscan preachers created more than two hundred Monti di Pietà in Central and Northern Italy. However, the lack of a firm business base undermined their stability. They were continuously dependent on charity to finance their operations, and the lack of any profit motive made them particularly inefficient. The presence of a Jewish community in the city provided three different means of solving the problem. First, the Franciscans continued to use the specter of Jewish usury to promote frequent processions, where the forgiveness of multiple sins was exchanged for donations to the Monte. Second, the Jews were frequently forced to pay a tax to the local Monte or to deposit some of the revenues from their money-lending activities. Finally, in other cases, they provided the initial expertise to establish the Monti. Accordingly, Attilio Milano (1963, pp. 165) concludes that "the co-existence of Monti di Pietà and Jewish pawn banks was not only possible but also necessary", and for this reason, the Jewish moneylenders who had been expelled after the creation of the Monti were, in most cases, invited to return.

The Monti di Pietà, which were founded as charity institutions, developed particular features that are typical of modern banks during the late sixteenth century. In 1515, Pope Leo X allowed them to charge interest on their loans; in 1560, Pope Pius IV authorized them to accept deposits from private citizens; and finally, in 1569, Pope Pius V allowed them to remunerate these deposits. However, the Monti continued to primarily rely on charity and donations to finance their growth until the late seventeenth century, and their endowments remained relatively low compared with those of Jewish pawnshops. The Monti were only allowed to receive deposits and to make loans to residents, these loans were limited in size (they could not exceed the average monthly wage of a peasant) and duration (6 months or 1 year), and their use was bound by rigid moral rules. Moreover, in periods of general hardship, raising sufficient funds was difficult for the Monti, as all of their donors and depositors resided in a single town. Conversely, Jewish pawnshops could lend much larger sums for longer periods. Furthermore, through a network of family ties, social relationships, and economic partnerships, the pawnshops were able to provide access to external sources of credit <sup>26</sup>.

The Monti di Pietà were not able to expand their range of activities from consumption credit to production credit until between the 17th and 18th centuries (De Maddalena (1975), Montanari (1999)). At this point, the turnover of the Monti di Pietà expanded to an unprecedented degree. Meanwhile, a series of papal edicts undermined the Jewish pawnshops. The final defeat of Jewish lenders came in 1682, when Innocent XI banned their pawnshops from the Papal States. In the three decades that followed, the ban was extended to all Italian states. While the Italian Jewish money-lending industry eventually disappeared, the Monti were surprisingly

---

<sup>26</sup> An interesting discussion on the complementarity between Jewish moneylenders and Monti di Pietà can be found in Botticini (2000). See also Montanari (1999) (p. 10).

resilient. By the end of the 19th century, approximately 300 Monti were operating in Italy (Pagliazzi and Nicosia (1968)).

An obvious question is whether those cities that were unable to rely on Jewish pawnshops or Monti di Pietà developed alternative means of providing credit that could avoid the interest ban. The answer is yes. First, interhousehold credit was very popular. As no credit contract could make reference to an interest rate, the actual payment of interest depended on the good faith of the parties. The legal risk involved in these types of transactions led to the development of more complex contractual forms in which the loan component was hidden or not easily identifiable. The most popular of these contractual forms by far was the so-called “Contratto alla Voce”. In essence, during planting season, the creditor (generally a trader or a large landowner) would pay the debtor (the peasant) an amount corresponding to the provisional value to purchase part of the farm’s produce, which was to be delivered after the harvest and paid for at the price established by the local authorities. The interest was hidden in the fact that the price decided by the local authorities was generally fixed in favor of the creditor and above the market price (Felloni (2011), Pertile (1895) p.565, Placanica (1982)).

Thus, the situation of Italian credit institutions in 1860, immediately after myriad small states and independent cities were unified in the Italian Kingdom, was characterized by local Monti di Pietà, with centuries of banking experience in those cities that formerly hosted Jewish communities during the early Renaissance, and ancient, complex contracts designed to conceal interest payments in the other cities. Immediately after Italian unification, the Italian banking system underwent profound reorganization. The Monti lost some of their banking prerogatives, while a new type of bank, the Casse di Risparmio, began to dominate local credit markets. The Casse di Risparmio were generally founded by either individual or groups of local Monti; in very few cases, they arose outside the auspices of the Monti (Zamagni (2005), Racine (2004)). They shared with the Monti a nonprofit status and an institutional mission to combat usury, but they were able to benefit from more relaxed regulatory legislation: they were allowed to collect deposits indiscriminately from the private sector and to invest them on an economic rather than a charity basis. Some decades later, following the banking reform of 1929, the regulatory legislation for the largest Monti di Pietà was assimilated into the legislation governing the Casse di Risparmio, and the Monti forfeited their original charitable mission. The final relevant legislative reform occurred in 1992 (but was only implemented in 1999). Both the Monti di Pietà and the Casse di Risparmio lost their nonprofit status, and they were transformed into joint-stock companies; moreover, their ownership was transferred to foundations, which continue to operate as nonprofit organizations.

### 3 Data Description

This paper uses three sets of data: the first and second include historical and current data, respectively, on Italian municipalities, while the third includes detailed characteristics of Italian firms.

The first set of data contains information on demography and local credit markets in Italy during the Renaissance (islands excluded). Data on historical Jewish demography come from the work of an Italian scholar, Attilio Milano. His book, "Storia degli Ebrei in Italia" (History of the Jews in Italy, 1963), includes a map of the Jewish communities in Italy in 1500 CE (the map is reproduced in Figure 1). In particular, he distinguishes among three types of communities: small (a dozen families), medium (a few dozen families) and large (several dozen families). These data were collected from several historiographical studies that were conducted at the regional and municipal levels. The historical urban population data come from Malanima (1998). Relying heavily on the seminal work on Italian population history by Beloch (1937), Paolo Malanima compiled a dataset containing urban population estimates for over 500 Italian cities on a centennial basis over the 1300-1861 period. The sample comprises all Italian cities with an estimated average population of at least five thousand inhabitants in the year of Italian unification (1861). Data on the locations of the Monte di Pietà during the first century of their existence (1470-1570) are provided by Meneghin (1986), while data on Jewish pawnshops operating in the same period are provided by Montanari (1999). Table 1a reports the summary statistics for this set of historical data. The sample comprises 360 cities, of which nearly half previously hosted a Jewish community. Of the 173 Jewish communities in 1500, over half were small (101), approximately one-third were medium-sized (47), and the rest were large (25). Nearly one-third of the Italian cities in the sample had a Monte di Pietà or a Jewish pawnshop operating in their territory. Regarding the urban population data, an extraordinary decline in urban populations occurred between 1300 and 1400 due to epidemics of the plague.

The second set of data contains current information on Italian municipalities (the data refer to the years 2002-2003). The geomorphological data come from the Italian Geographical Institute De Agostini. Statistics on population and education levels come from the Italian National Statistical Institute. The value-added data also come from this source; these data are not available at the city level but rather at the level of the "local labor system" (LLS) level. This unit is defined on the basis of the Population Census data and comprises a set of contiguous municipalities with a high degree of self-containment in daily commuter traffic and similar economic and geographic characteristics. Italy has a total of 854 LLSs, and all cities in my sample are located in distinct LLSs. In the remainder of my analysis, I will assume that the per-capita GDP of each city is identical to that of the LLS in which the city is located. Financial data on branch density and private credit come from the Bank of Italy. Table 1b reports summary statistics for these city-level data. The level of economic development varies substantially across Italian cities. The wealthiest city has a GDP per capita that is more than eight

times that of the poorest city. Regarding the financial data, the private credit to GDP ratio has a surprisingly large mean (0.71) and standard deviation (0.57). For example, using a sample of 75 countries and a similarly constructed measure of the private credit to GDP ratio, Levine, Loayza, and Beck (2000) report a mean of 0.4 and a standard deviation of 0.29.

The third dataset contains current information on Italian firms. The main source of information is Amadeus, a comprehensive firm-level, pan-European database developed by Bureau Van Dijk. For each firm, Amadeus provides data on the industry in which the firm operates (at the 4-digit NACE level), the location, the year of incorporation, the ownership structure, and the number of employees, in addition to complete balance sheets and profit and loss statements. The dataset includes both publicly traded and nontraded companies and accounts for nearly 90 percent of the sales reported in the national accounting data. To deflate firms' sales, materials, intermediates, and capital, I merged this dataset with an industry-level dataset that comprises output and input prices for industries at roughly the 2-digit level of aggregation from the EU-KLEMS project. Table 1c reports summary statistics for firms' deflated quantities.

## 4 Long-Term Persistence

The objective of this section is to establish the causal effect of Jewish demography during the Renaissance on the current economic performance of Italian municipalities.

The initial premise is that the effect of Jewish communities on the evolution of the Italian banking system and, through this channel, on local economic development can be represented by the following system of equations:

$$JF_i = \alpha_1 J_i^{1500} + X_i' \beta_1 + v_{1,i} \quad (1)$$

$$MP_i = \alpha_2 JF_i + X_i' \beta_2 + v_{2,i} \quad (2)$$

$$\log F_i = \alpha_3 MP_i + X_i' \beta_3 + v_{3,i} \quad (3)$$

$$\log Y_i = \alpha_4 \log F_i + X_i' \beta_Y + v_{4,i} \quad (4)$$

where  $J_i^{1500}$  is a dummy variable that identifies cities that previously hosted a Jewish community in 1500;  $JF_i$  and  $MP_i$  identify those cities that hosted Jewish pawnshops and Catholic Monti di Pietà in the following

century, respectively;  $F_i$  measures the current level of local banking development;  $Y_i$  is per-capita income; and  $X'$  is a vector of covariates that affect all variables.

The first equation captures the fact that, during the Renaissance, the Jews were the only people in Italy allowed to charge interest and that they derived their livelihoods almost exclusively from revenues from money-lending. Thus, the presence of a Jewish community was generally associated with the presence of several Jewish pawnshops in local credit markets. This association is confirmed by the first four columns of Table 2, which reports the OLS estimates of equation 1 in the historical Kingdom of Naples (columns 1 and 2) and in the rest of Italy (columns 3 and 4). While no relationship exists between Jewish demography in 1500 and the presence of a Jewish pawnshop between 1470 and 1570 for the Kingdom of Naples, which expelled the Jews, the presence of a Jewish community is associated with an increase in the probability of having a Jewish pawnshop of between 35 and 50 percent (depending on the size of the community) for the rest of Italy. This result is confirmed when I only exploit variation within Italian provinces (columns 2 and 4).

The second equation reflects the mainstream historical perspective on the rise of the Monti di Pietà. The Monti were created expressly to counteract the influence of Jewish moneylending. The presence of a Jewish community not only spurred the creation of the Monte di Pietà but also was necessary for the survival of a Monte. The Monti were continuously dependent on charity and donations: waving the specter of Jewish usury was an effective means of raising funds. In the first century of their activity, 229 Monti di Pietà opened in Italy, and the great majority of them were located in cities that hosted Jewish communities; only 17 opened in the Kingdom of Naples, from which the Jewish population had been expelled (where nearly 40 percent of the Italian urban population was concentrated). Indeed, columns 5 and 6 of Table 2 confirm that cities located outside the Kingdom of Naples in which a Jewish pawnshop was operating were approximately 50 percent more likely to host a Monte di Pietà.

The third equation captures the fact that, where the expansion of the Monti di Pietà could benefit from a Jewish presence, the Monti were able to survive until the present day and thus formed the foundation of the contemporary Italian banking system. In 1995, the largest Italian banks, measured by number of branches in Southern, Central, and Northern Italy, were Banco di Napoli, Banca di Roma, and San Paolo, respectively. Banco di Napoli was founded through the merger of eight Catholic institutions that were established in Naples between 1539 and 1640<sup>27</sup>, while Banca di Roma and San Paolo originate from the Monte di Pietà of Rome <sup>28</sup>

---

<sup>27</sup>In 1539, the Monte di Pietà of Napoli was founded with the philanthropic purpose of providing interest-free pawn loans. Subsequently, the Monte di Pietà opened a depository bank that was recognized with a viceregal proclamation in 1584. Over the next 50 years, seven other Catholic institutions were founded in Naples: the Sacro Monte e Banco dei Poveri (1600); the Banco Ave Gratia Plena or Banco della Santissima Annunziata (1587); the Banco di Santa Maria del Popolo (1589); the Banco dello Spirito Santo (1590); the Banco di Sant'Eligio (1592); the Banco di San Giacomo e Vittoria (1597); and the Banco del Santissimo Salvatore (1640). These eight banks prospered for over two hundred years until they were merged to create the "Banco Nazionale di Napoli" in 1794 by Ferdinand IV of Bourbon.

<sup>28</sup>Banca di Roma regrouped the histories of several notable Rome-based financial houses. The oldest of these financial houses



and the Monte di Pietà of Turin<sup>29</sup>, respectively. More generally, the great majority of modern Italian banks trace their origins to the Monti di Pietà that were created during the Renaissance<sup>30</sup>. Columns 7-10 of Table 2 show that the presence of a Monte di Pietà in a city between 1470 and 1570 is associated with an increase in the current ratio of private credit to GDP in the municipality of approximately 50 percent and an increase in branch density of approximately 19 percent (11 percent when province fixed effects are controlled for).

The last equation captures the effect that local banks exert on current economic development. The last two columns of Table 2 show a positive correlation between current credit availability and income per capita in Italian municipalities: a 1 percent increase in the private credit to GDP ratio (in branch density) is associated with a 0.1 percent (0.23 percent) increase in per-capita income.

All the results presented in Table 2 are correlations, which do not necessarily indicate causal effects. In particular, the same local advantages that led the Jews to settle in a particular city may also be responsible for the presence of Jewish pawnshops and Monti di Pietà in the city during the Renaissance and for the more developed credit markets and higher levels of per-capita income today. Jewish demography in 1500 was certainly influenced by the economic, institutional, cultural, and geographical environment. Controlling for all of these factors is practically impossible, and the regressions above cannot reject the alternative that these factors are the ultimate source of persistence.

To address this issue and to still be able to identify the causal effect of Jewish demography in 1500 on current economic development, I use a difference-in-difference approach based on an historical event: the expulsion of the Jews from the Kingdom of Naples between 1504 and 1541. I rely on two assumptions.

The first assumption is that the expulsion was exogenous, meaning that no unobservables responsible for the expulsion affect current economic outcomes. This assumption may be violated if this event reflected, for example, a more intolerant local attitude toward diversity or usury. However, this is not the case. The expulsion

---

was the Monte di Pietà di Roma, founded by a papal bull in 1539 in the aftermath of the sack of Rome in 1527 and the famine of 1538. The rebuilding effort drained the city of credit capital and increased the interest rates charged by Jewish moneylenders. In response, Pope Paul III issued a bull establishing the Monte di Pietà di Roma, which was placed under the protection of the Franciscan Order. Another Italian bank that participated in the development of what became Banca di Roma is the Banco di Santo Spirito, which was created in 1605 to raise funds for the charitable operations of the Arch-hospital Santo Spirito.

<sup>29</sup>The "Compagnia della Fede Cattolica di San Paolo" was created in 1563 after Piedmont countered the invasion of Phillip II of Spain. The long war had aggravated an already difficult economic situation, increasing famine and poverty in the city of Torino, and the initial aim of the Compagnia was to centralize the collection and distribution of alms. In 1579, with the formal intent of combating Jewish moneylenders, the Compagnia created a Monte di Pietà, which has operated uninterrupted (with an exception of less than 10 years during the Napoleonic domination of Piedmont) to the present day.

<sup>30</sup>For example, Banca Monte dei Paschi di Siena was founded in 1473 as a Monte di Pietà and is currently the third-largest Italian bank by capitalization. Banca Carige is the successor to the Monte di Pietà di Genova. Banca Carimonte, which recently joined the Unicredit group, is the product of aggregating four ancient Monti (Ravenna, 1491; Bologna, 1473; Savignano, 1579; Cesena, 1487) with the Cassa di Risparmio di Cesena. Unibanca was created by the subsequent merger of several Monti (Lugo, 1546; Massa Lombarda, 1572; Faenza, 1491) with the Cassa di Risparmio di Faenza, which was part of the Monte di Faenza before it became a separate entity in 1891. Other examples of modern Italian banks that track their origins to the experience of the Monti di Pietà are Banca del Monte di Lucca (1516), Banca Monte Parma (1488), and Banca del Monte di Lombardia (from the merger of the Monti of Milano, 1483; Mantova, 1484; Cremona, 1490; Monza, 1492; Pavia, 1493; and Bergamo, 1557). Figure A.3 in the online appendix depicts the main bank branches in the city of Bologna today. The historic building still bears the legend, "Monte di Pietà di Bologna", and its founding year, 1473.

originated from the lack of heir to the throne when the king of Naples, Frederick IV, died in 1503. The territories of the Kingdom of Naples were therefore divided between the two strongest European monarchies: France and Spain. One year later, they all fell to the Spanish crown, which had conquered two other large municipalities in Central Italy. At that point, the edict expelling the Jews, which had been promulgated in Spain in 1492, was extended to these new Spanish territories in Italy. The edict was strongly opposed by the local aristocracy<sup>31</sup> and resulted in riots and protests in several cities. The edict may thus be reasonably concluded to solely reflect the attitude of the Spanish crown toward the Jews, rather than local sentiments.

The second assumption is that those unobservables that systematically drove Jewish communities toward certain cities and that affect local current economic development differ between those territories that fell under the Spanish crown in 1504 and those that did not.

Given the two assumptions above, a useful framework for studying the long-term effect of Jewish communities during the Italian Renaissance on current economic development is provided by the matrix described in Table 3, which divides Italian cities along two dimensions: (1) whether they hosted a Jewish community in 1500 and (2) whether they belonged to a territory where Jews were still allowed to reside in 1504.  $Y$  measures the current per-capita income in each cell. A simple test for the magnitude of the long-term effect of hosting a Jewish community can therefore be conducted by examining whether the difference in per-capita income between cities that hosted Jewish communities in 1500 and cities that did not is higher in regions in which Jews were allowed to reside in 1504 compared with regions in which they were expelled as a consequence of the Spanish domination, or:

$$(Y_{11} - Y_{10}) - (Y_{01} - Y_{00})$$

As is customary in the literature, I express the difference-in-difference results in a regression format:

$$\log Y_i = \gamma_1 Stay_i + \gamma_2 J_i^{1500} + \gamma_3 J_i^{1500} * Stay_i + X_i' \gamma + \epsilon_{1i} \quad (5)$$

where  $Stay_i$  is a dummy that identifies territories in which Jews were allowed to stay (i.e., that did not belong to the Kingdom of Naples). Table 4 reports the results. In column 1, the only controls are the usual set of geographical characteristics and the province dummies.

There are two striking results.

First, the impact of the presence of a Jewish community in 1500 in the Kingdom of Naples on current per-

---

<sup>31</sup>For example Lagumina and Lagumina (1992) report on two petitions, one drafted and signed by high-ranking officials and members of the nobility, and the other from the jurats of Palermo (elected representatives) that were addressed to the king in protest to the expulsion. See also Simonsohn (2006) (pp. 4739-4744) and Ingram (2009).

capita income (i.e. the estimated value of  $\gamma_2$ ) is not significant, either economically or statistically. In the once Spanish-dominated territories, from which Jews were expelled, no current difference in per-capita income exists between cities that formerly hosted Jewish communities and cities that did not. Thus, whatever unobservable led the Jews to establish communities in particular cities in 1500 does not seem to affect the current economic development of these cities.

Second, the coefficient of the interaction term is statistically significant at the 1 percent level and is very large. Having a Jewish community in 1500, in a region from which the Jews were not subsequently expelled, is associated with a nearly 11 percent higher income today. Thus, the presence of a Jewish community in 1500, in those areas from which the Jews had not been expelled, has surprisingly significant long-term effects on the economic development of Italian municipalities.

In column 2, I perform a simple placebo test to confirm that the effect of Jewish demography on local economic development results from the creation of the Monti di Pietà that the Jewish community spurred. Specifically, I include a triple interaction among a dummy that identifies those cities that developed a Monte di Pietà in the first century of their activity and the variables  $J_i^{1500}$  and  $Stay_i$ . This triple interaction is positive and significant, while, in this specification, the interaction  $J_i^{1500} * Stay_i$  becomes two times smaller and statistically insignificant. Thus, the presence of a Jewish community in territories that were not part of the Kingdom of Naples only affected current per-capita income in those cities in which a Monte was created.

The following columns report the results of a series robustness checks on the benchmark specification. In particular, the results are robust to the inclusion of a measure of the area of the municipality (column 3) and a dummy that identifies regional administrative capitals (column 4). In column 5, I rerun the regression but control for the size of the urban population in 1300 and 1400. Cities that were larger during the Renaissance could be more economically developed today because they inherited higher levels of human and social capital (see Guiso et al. (2008) and Percoco (2009)). This factor could bias my results if the Jewish communities in the Kingdom of Naples were concentrated in smaller or larger cities relative to other Jewish communities. The ancient urban population is clearly an endogenous regressor in equation 5: certain omitted characteristics may both have affected the urban population five centuries ago and drive per-capita income today. However, the very marginal effect of the inclusion of the coefficient on the interaction term suggests that my results are not driven by the distribution of the urban population during the Renaissance. Furthermore, adding several controls for the quality of a municipality's human capital (i.e., the illiteracy rate and percentages of residents that completed primary, secondary, and undergraduate education) does not substantially affect the estimates (column 6).

As explained in the previous section, the Duchy of Milan also fell under Spanish domination in 1535, and in

1597, Jews were also expelled from that region. In column 7, I exclude municipalities belonging to this duchy in the sixteenth century from the sample. As expected, the estimate of the coefficient on the interaction term increases substantially (by approximately one-third)<sup>32</sup>.

Another possible concern is that the factors that led to the creation of a Jewish community may differ between territories that subsequently fell under the Spanish crown and those that did not. While Jewish communities in Central and Southern Italy trace their origins to the first century CE, the Jews who settled in Northern Italy did so much later. Therefore, the locational advantage that led the Jews to settle in certain locations in the North may have been very different from the locational advantage that led them to settle in the South. To address this concern, in column 8, I limit the analysis to Central Italy. Surprisingly, the estimate of the coefficient on the interaction term increases substantially. This result is likely obtained because the expansion of the Monti di Pietà began in Central Italy, and Franciscan preachers focused their efforts against Jewish usury in these regions. Nevertheless, the division of Italy into North/Central/South is a modern conception. In Table 5, I repeat the difference-in-difference analysis but focus on a sample of cities located sufficiently near the border of the Kingdom of Naples. The first column focuses on cities located within 100 kilometers of the border; the following columns extend the analysis to cities within 150, 250, 350, and 450 kilometers of the border. The results confirm the qualitative findings in Table 4. Moreover, I cannot reject the hypothesis (at the 5 percent significance level) that the coefficient on the interaction term is identical across the five different subsamples in the table.

Note, however, that the results in Tables 4 and 5 might only capture a lower bound of the true effect of Jewish demography during the Renaissance on economic development. First, conducting the analysis on cities that had at least 5,000 inhabitants in 1861 might introduce a survival bias. If cities without Jewish communities in 1500, which were not part of the Kingdom of Naples, remained relatively small because of the absence of well-developed local banks, they might be excluded from the sample. Second, the average per-capita GDP in the LLS might underestimate the per-capita GDP of a town, as urban and industrial centers tend to have higher incomes than the surrounding countryside.

In sum, the presence of a Jewish community in 1500 is only associated with higher per-capita income in territories in which Jews were not expelled as a consequence of the Spanish edict. This finding suggests that it is not the characteristics of the cities in which the Jews chose to reside in 1500 but rather their continuous presence in the fifteenth and sixteenth centuries that affects current local economic development. More specifically, according to these estimates, this continuous presence is currently responsible for an increase

---

<sup>32</sup>The first six columns of Table 4 have been reproduced for the sample that excludes the Duchy of Milan. The qualitative results are unchanged; however, in all cases, the estimates of the coefficient on the interaction term are approximately one-third larger. See Table A.1 in the online appendix.

in per-capita income of between 11 and 19 percent. A common argument is that the expulsion of the Jews was responsible for the long-term decline of European territories under the Spanish crown<sup>33</sup> and the beginning of the economic divergence between Northern and Southern Italy. The results above allow me to infer the extent to which the current North-South gap in economic development is explained by this shock. According to the most conservative estimates, if Jews had not been expelled from the Spanish territories, GDP would have been 7 percent higher in Southern Italy. Overall, the expulsion explains at least 10 percent of the income gap between Northern and Southern Italy. I do not have reasonable theories to explain the remaining gap. However, these numbers may (in fact, likely) underestimate the effect of the expulsion. Because of temporary migration (due to the mechanism of the *condotta*) in the sixteenth century, the Jewish communities' positive effects likely spilled over into the neighboring towns, further contributing to the development of financial institutions in Central and Northern Italy.

## 5 Effects of Local Banks on Development

In the previous section, I showed that the continuous presence of a Jewish community during the sixteenth century exerted substantial effects on the economic development of Italian cities. The objective of this section is to confirm the channels through which this effect occurred by revealing two causal relationships: the impact of the incorporation of a Monte di Pietà during the Renaissance on the development of the local banking system and the impact of local banks on economic performance.

First, I establish the latter relationship by estimating, through two-stage least-squares (2SLS), the coefficient  $\alpha_4$  in equation 4, which captures the impact of increasing the availability of local credit on per-capita income in contemporary Italian cities. A natural candidate for an instrument in this context is Jewish demography in 1500. Above, I argued that there are historical reasons to believe that Jewish communities in 1500 fostered the development of local credit markets. I next argue that Jewish demography in 1500 is uncorrelated with the error term in equation 4 (i.e.  $Cov(J_i^{1500}, v_{4,i}) = 0$ ). To support this argument, I decompose the residual  $v_{4,i}$  into three components:  $\zeta_{[-\infty;1500],i}$ ,  $\zeta_{[1500;2000],i}$  and  $\varepsilon_i$ :

$$v_{4,i} = \varepsilon_i + \zeta_{[1500;2000],i} + \zeta_{[-\infty;1500],i}$$

where  $\varepsilon_i$  represents exogenous shocks and measurement errors affecting the per-capita income of city  $i$ ;  $\zeta_{[-\infty;1500],i}$  is the set of unobserved features of city  $i$  that affect current per-capita income and that were already in place before 1500; and  $\zeta_{[1500;2000],i}$  is the set of unobserved features of city  $i$  that affect current per-capita income and that

---

<sup>33</sup>See, for example, Peri (1988) (chp. 13) and Epstein (1992) (p. 337) for Sicily, Kamen (1998) for Spain, and Ruiz-Martin (1949) for Southern Italy.

arose after 1500. The three sufficient conditions for the exclusion restriction to be valid are  $Cov(J_i^{1500}, \varepsilon_i) = 0$ ,  $Cov(J_i^{1500}, \zeta_{[1500;2000],i}) = 0$  and  $Cov(J_i^{1500}, \zeta_{[-\infty;1500],i}) = 0$ .

Although the first condition is valid by construction, the other two conditions require further discussion. As a first step, I argue that  $Cov(J_i^{1500}, \zeta_{[1500;2000],i}) = 0$ . This assumption would be invalidated if Jewish demography during the early Renaissance affects current economic development in a manner that does not result from its direct effect on the development of local credit markets. Jews have traditionally displayed a high level of literacy; moreover, historically, Jews were employed in occupations that were particularly skill-intensive (Botticini and Eckstein (2005)). Thus, Jewish communities may persist until today and continue to affect the level of human capital in their cities, or they may have eventually disappeared, but not before they transmitted their knowledge to the rest of the population, thereby contributing to the present level of human capital. However, both cases seem implausible. First, the distribution of the Jewish population in Italy is well documented to have changed completely over the last two centuries, and with three notable exceptions (Rome, Florence, Venice), most of the ancient Jewish communities have disappeared or are insignificant in size<sup>34</sup>. Second, Renaissance-era Jewish communities are unlikely to have contributed to the cultural, institutional, and economic development of their cities (if not through their effects on financial development). From the beginning of the sixteenth century through the end of the nineteenth century, Jews were segregated from the rest of the population and nearly exclusively derived their livelihoods from moneylending. The Lateran Council forbade Catholics from interacting with Jews for any purpose other than business. The Jews were forced to live in a dedicated section of the city, the ghetto, that they were not allowed to leave during the night; during the day, they were obliged to wear a distinctive badge to be easily recognizable by Catholics. They were excluded from all professions (with the exception of medicine and moneylending), academia, and all public offices and were not allowed to employ non-Jews in their pawnshops. The restrictions were strengthened in 1555 when the papal bull “Cum nimis absurdum<sup>35</sup>”, which forbade the Jews from owning any real estate, reaffirmed the necessity to segregate Jews from the Catholic population and forbade Catholics from working for Jews or receiving treatment from Jewish doctors. The bull remained effective until 1848 in Piedmont and 1870 in the rest of Italy.

As the final step in defending the exclusion restriction, I argue that  $Cov(J_i^{1500}, \zeta_{[-\infty;1500],i}) = 0$ . This

---

<sup>34</sup>Bonfil writes that “[between 1815 and 1938], the structure of the Jewish community changed radically. In 1840 there existed about 70 organized communities, in 1938 only 23. [...] The distribution of the Jewish population also changed. Many small rural communities disappeared, while medium-sized urban ones suffered through migration to the large centers”. Some years later, the Nazi persecutions in Italy during the Second World War decimated Italian Jewry. Through deportations, conversion to other religions, and emigration, in fewer than 5 years, Italy lost nearly half of its Jewish population.

<sup>35</sup>The first two lines of the bull, “Cum nimis absurdum et inconveniens existat ut iudaei, quos propria culpa perpetuae servituti submisit, sub praetextu quod pietas christiana illos receptet et eorum cohabitationem sustineat [...]”, can be translated as follows: “Since it is completely senseless and inappropriate to be in a situation where Christian piety allows the Jews (whose guilt—all of their own doing—has condemned them to eternal slavery) access to our society and even to live among us [...]”.

condition would be violated if omitted variables both influenced Jewish demography during the Renaissance and drive current local economic development. However, as the previous section indicates, if any unobservable is systematically correlated with the cities in which the Jews lived, it does not have any effect on current per-capita income: in areas from which Jews were expelled during the sixteenth century, no differences in per-capita income exist today between cities that hosted Jewish communities and those that did not<sup>36</sup>.

Having discussed the validity of my instruments, I move on to the 2SLS estimates of equation 4. I restrict the analysis to cities that did not belong to the Kingdom of Naples in 1503. The results are presented in Table 6. When I simply regress log income per capita on log credit availability to the private sector, the estimates of  $\alpha_4$  are positive and highly significant: an increase in credit availability of 1 percent generates an increase in local GDP by 0.22 percent. As expected, the first-stage regression (reported in Panel B) indicates that the presence of a Jewish community in 1500 has a positive and significant effect on current credit availability. In column 2, I add province fixed effects. Surprisingly, their impact on the elasticity of interest is very low (it increases from 0.22 to 0.26).

Column 3 reports the benchmark specifications: the controls comprise the set of geographical characteristics and the province dummies. The estimates for  $\alpha_4$  are unchanged, and the F-test for the excluded instrument is 41.3, suggesting that these estimates do not suffer from a weak instrument problem.

In the following three columns, I repeat the exercise but use not only the presence of a Jewish community in 1500 but also its size as instruments. More specifically, the availability of credit is treated as endogenous and modeled as follows:

$$\log F_i = \xi_1 J_i^S + \xi_2 J_i^M + \xi_3 J_i^L + X_i' \xi + \nu_i \quad (6)$$

where  $J_i^S$ ,  $J_i^M$  and  $J_i^L$  indicate the presence of a small, medium and large community in 1500, respectively. Interestingly, the first-stage regressions in Panel B show that not only the presence of a Jewish community but also its size affects the current credit-to-GDP ratio: the larger the Jewish community is, the greater current credit availability is. Note that the results of the second-stage regression are nearly unaffected, although this specification raises a possible concern: the size of the Jewish community in 1500 may reflect a locational advantage that continues to affect income (I am only able to argue that the presence of the community does not).

Finally, in the last three columns, I use branch density instead of the credit-to-GDP ratio as a measure of local banking development. The results are surprising. The effect of banks on income is much larger than that

---

<sup>36</sup>Table A.2, in the online appendix, highlights that in areas from which Jews were expelled in 1504, no differences in credit availability to the private sector exist today (while large differences persist in areas from which Jews had not been expelled).

in any other previous result: an increase in branch density of 1 percent increases per-capita GDP by 0.7-1.2 percent, depending on the econometric specification. This finding seems to validate the view that banks affect economic performance through the provision of not only credit but also a greater variety of services.

Table 7 reports the results of a set of robustness checks. The previous results are unchanged when I control for the size of the municipality (columns 1 and 4) and whether the city is the capital of its region (columns 2 and 5). In columns 3 and 6, I add the populations of the city in 1300 and 1400 to the covariates. This robustness check is motivated by the potential for the presence of a Jewish community during the Renaissance to serve as a proxy for the size of the city in this period. The estimates of the elasticity of per-capita income with respect to local banking development decline by one-fourth (from 0.24 to 0.19 when I use credit availability and from 1.2 to 0.9 when I use branch density). Columns 7 and 8 confirm the qualitative results when I exclude cities that were part of the Duchy of Milan from the sample (from which Jews were expelled at the end of the sixteenth century)<sup>37</sup>.

In the last four columns of Table 7, I restrict the sample to two more homogenous sets of cities: columns 9 and 10 restrict the analysis to Central Italy, while columns 11 and 12 focus on cities that were under the Papal States. In Table 8, I restrict the sample to cities near the border of the Kingdom of Naples. In particular, I only consider cities located at a distance of no more than 100, 150, 250, 350, or 450 kilometers from the border. In all these subsamples, the effect of local banks on current per-capita income is positive and significant, although it generally seems to be more pronounced in Central Italy.

The second objective of this section is to establish the causal effect of the incorporation of a Monte di Pietà during the Renaissance on Italian banks today. Table 9 reports 2SLS estimates of equation 3. In column 1, the only covariates are the set of geographical characteristics and the province dummies. There are two striking results. First, there is extraordinary persistence in the level of local banking development. The presence of a Monte di Pietà during the sixteenth century increases the current availability of credit to the private sector (in terms of GDP) by more than one hundred percent. Second, in line with equations (1) and (2), the presence of a Jewish community in 1500 is a strong predictor of the locations of the Monti two centuries later. Having a Jewish community is associated with an increase in the probability of hosting a Monte di Pietà of nearly 40 percent. The qualitative results are confirmed in column 2, where I add the estimated population in 1300 and 1400 to the regressors, although the estimate of the persistence parameter,  $\alpha_3$ , declines by one-third.

In columns 3 and 4, I repeat the analysis but use current branch density as the dependent variable. The point estimates for  $\alpha_3$  are approximately one-fifth the size of those in previous columns. This result seems

---

<sup>37</sup>Table 6 has been reproduced for the sample that excludes the Duchy of Milan. The qualitative results are nearly unchanged (the estimates for the elasticity of per-capita income with respect to local banking development are slightly larger). See Table A.3 in the online appendix.



to suggest that the presence of a Monte di Pietà increases not only the number of local banks but also their average size (as measured by the credit that they provide). Finally, in columns 5 and 6, I exclude the Duchy of Milan from the sample, while in columns 7 and 8, I restrict the analysis to Central Italy. The results are qualitatively unchanged.

In sum, the empirical evidence for the long-term persistence of local banking institutions is robust. The data analysis in this section confirms that the presence of a Jewish community five centuries ago fostered current local banking development through its effect on the development of the Monti di Pietà. Moreover, the 2SLS results indicate that local banking development has a significant effect on economic performance. This effect is robust to the use of different measures for banking development, different samples, and different econometric specifications, although it is larger when the analysis is restricted to Central Italy.

## 6 Financial Development and Technology

The most successful explanation of the mechanisms through which well-functioning banks affect economic development has been suggested by the Shumpeterian growth literature, which stresses the importance of banks for aggregate productivity. According to this body of literature, financial intermediaries are able to identify the more innovative entrepreneurs and more productive production processes and to provide them with the necessary purchasing power by diverting the means of production from their previous uses. By selecting the more promising investments within a firm and across different firms, well-functioning banks are able to foster aggregate productivity and, through this channel, economic development.

To test the Shumpeterian hypothesis, I use a detailed dataset on Italian firms in the manufacturing sector. First, I infer the productivity of each firm in the sample as the residual of an estimated production function. Then, I compute a measure of the aggregate productivity in Italian cities that aggregates the productivity of the local firms. Finally, I study how local banks affect this productivity measure.

Assume that the (gross) production function in industry  $j$  is Cobb-Douglas:

$$\log Y_{fit} = \varepsilon_L^j \log L_{fit} + \varepsilon_K^j \log K_{fit} + \varepsilon_M^j \log M_{fit} + \delta_{it} + \eta_{jt} + \alpha_f + \omega_{fit} \quad (7)$$

where  $Y_{fit}$  denotes the total sales of firm  $f$  in city  $i$ ,  $L_{fit}$ ,  $K_{fit}$  and  $M_{fit}$  are the firm's production factors,  $\delta_{it}$  is a city-specific component of productivity,  $\eta_{jt}$  is an industry-specific common component of productivity,  $\alpha_f$  is a time-invariant, firm-level component, and  $\omega_{fit}$  is an idiosyncratic component. I estimate equation 7 (at the 3-digit industry level) by using several methodologies: OLS, Difference OLS, Olley and Pakes, Difference GMM, and System GMM. The advantages and disadvantages of each choice are well known, although there

is no consensus on which estimator should be used<sup>38</sup>. The results in this section are robust to these different methodologies.

Having obtained the estimates of the output elasticity to each production factor, I recover the total factor productivity of firm  $f$ ,  $t_{fi}$ , as follows:

$$\log t_{fi} \equiv \log Y_{fi} - \hat{\varepsilon}_L^j \log L_{fi} - \hat{\varepsilon}_K^j \log K_{fi} - \hat{\varepsilon}_M^j \log M_{fi} \quad (8)$$

Finally, I compute a measure of the aggregate productivity of city  $i$  as a weighted average of the productivity of the firms operating within the city:

$$\log T_i \equiv \sum_{f \in i} w_{fi} \log t_{fi} \quad (9)$$

where the weights are  $w_{fi} \equiv VA_f / \sum_{f \in i} VA_f$  and  $VA_f$  is the value added produced by firm  $f$ . Using Jewish demography in 1500 as an instrument, I then regress aggregate productivity on the two measures of local banking development:

$$\log T_i = \alpha_T \log F_i + X_i' \beta_T + \nu_{1,i} \quad (10)$$

The results are reported in the first two columns of Table 10. The only controls are the usual province fixed effects and the geomorphological characteristics. Local credit availability and branch density have a positive and significant effect on aggregate productivity in Italian municipalities. Specifically, an increase in the credit-to-GDP ratio of 1 percent increases local aggregate productivity by 0.05 percent, while the same increase in branch density has a much larger effect of approximately 0.5 percent.

Most of the theoretical literature focuses on two channels through which banks could affect firm productivity. First, banks produce ex ante information on possible investments; this implies a reallocation of capital toward more productive firms. Second, banks monitor investments ex post and exert pressure on corporate governance; this implies a general increase in the productivity of firms. To distinguish between these two channels, it is helpful to decompose productivity figures in Italian cities into two components, as suggested by Olley and Pakes (1996):

---

<sup>38</sup> A fundamental estimation problem concerns the endogeneity of the input variables, which are likely to be correlated with both  $\alpha_f$  and  $\omega_{fit}$ . Correlation with  $\omega_{fit}$  may reflect either a simultaneity of input choices or measurement errors. Given the brief duration of the panel, eliminating  $\alpha_f$  through a within transformation is not the appropriate strategy. An approach involving differencing (7) using the difference GMM estimator (Arellano and Bond (1991)) is a possibility, but appropriately lagged values of the regressors may be poor instruments if the inputs are very persistent. Using the GMM System estimator (Blundell and Bond (1998) and Blundell and Bond (2000)) is likely a better option. An alternative approach is proposed by Olley and Pakes (1996). This estimator addresses the simultaneity (and selection) problem by using firm investment as a proxy for unobserved productivity and only requires the presence of one unobserved state variable at the firm level and monotonicity in the investment function. A recent survey of different methodologies to estimate the production function is provided by Van-Beveren (2010).

$$\log T_{i,t} = \sum_{f \in i} \Delta \log t_{fit} \Delta w_{fit} + \overline{\log t_{it}} \quad (11)$$

where:

$$\Delta \log t_{fit} \equiv \log t_{fit} - \overline{\log t_{fit}} \quad \text{and} \quad \Delta w_{fit} \equiv w_{fit} - \overline{w_{it}}$$

and:

$$\overline{\log t_{it}} \equiv \sum_{f \in i} \log t_{fit} \quad \text{and} \quad \overline{w_{it}} \equiv \sum_{f \in i} w_{fit}$$

The first term in equation 11 represents the sample covariance between productivity and value added. The larger this covariance is, the higher the share of value added that goes to more productive firms and the higher city  $i$ 's productivity will be. The second term is the unweighted average of firm-level productivity figures. Generally, the first term is interpreted as a measure of the economy's effectiveness in reallocating inputs toward more productive firms, while the second term is considered a valid measure of aggregate technology.

Columns 3-4 and columns 5-6 in Table 10 present 2SLS estimates for the equations:

$$\text{Re } all_i = \alpha_R \log F_i + X_i' \beta_R + \nu_{2,i} \quad (12)$$

$$\overline{\log t_i} = \alpha_U \log F_i + X_i' \beta_U + \nu_{3,i} \quad (13)$$

respectively, where  $\text{Re } all_i \equiv \sum_{f \in i} \Delta \log t_{fit} \Delta w_{fit}$  and  $X_i$  is the usual set of covariates. Local banking development has a positive and statistically significant effect on the variations in aggregate productivity that are due to the reallocation of resources toward more efficient firms. *Ceteris paribus*, a 1 percent increase in credit availability increases the reallocation term by 0.035 percent; again, the effect of branch density is much larger, as a 1 percent increase in branch density increases the reallocation term by 0.3 percent. Over two-thirds of the effect of local banks on aggregate productivity is explained by their effects on the reallocation of resources, while less than one-third is explained by their effects on the unweighted average firm productivity figures. This finding seems to validate the original Schumpeterian view that banks affect growth by identifying the best entrepreneurs and diverting resources to finance their innovations.

The existence of cities with high banking development may still generate a negative externality for areas lacking such development, and thus, the previous results may overstate the effect of banking on aggregate

productivity and, through this channel, on economic development. Moreover, this possibility may be greater in industries in which firms can easily relocate than in other industries. To exclude this possibility, in Table 11, I restrict the sample to firms active in the sector in which flexibility in geographical location is the lowest: construction. The results are nearly unchanged with respect to those in the previous table: this finding suggests that the mobility of firms is not crucial in explaining the effects of local banks on productivity.

In conclusion, local banking development has strong, positive effects on city-level aggregate productivity. Moreover, the effects of banks on aggregate productivity appear to operate by reallocating resources toward more productive firms rather than by increasing the average productivity of firms. This finding seems to validate theories stressing the importance of the role of the banks in exploiting *ex ante* information on investment opportunities to select the more promising investments.

## 7 Conclusion

Numerous historiographic accounts conjecture that Jewish communities in Italy played an important role in fostering the development of local banks and, through this channel, the economic development of a large number of Italian cities. In particular, a fascinating hypothesis presented in this stream of literature is that the decline of Southern Italy began with the expulsion of the Jews by the Spanish crown and its subsequent effects on local credit markets. This conjecture, which has not been formally tested, is interesting for two reasons: it presupposes extraordinary persistence in the level of local banking development, and it imputes a pivotal role to local banks in the development of local economies.

My results confirm that the level of local banking development during the Renaissance (proxied by the presence of a Monte di Pietà or a Jewish pawnshop) had strong causal effects on the current availability of credit in Italian municipalities. Moreover, evidence indicates that local banks have had an important effect on current income. In particular, well-functioning banks are better able to reallocate resources toward the most productive firms and, in this way, increase aggregate productivity and income. Finally, my empirical estimates suggest that the expulsion of Jews from the Spanish territories in Italy is responsible for a significant portion of the income gap between Northern and Southern Italy.

The Monti di Pietà were originally intended to provide small loans to the poor, and their role in Italian society during the Renaissance was not markedly different from that of modern microfinance in developing countries. My results confirm that, at least in the past, microcredit-like institutions were able to foster financial development and, through this channel, economic development in the long run.

However, this work lacks a rigorous analysis of the mechanisms that are responsible for the persistence in the level of local banking development. I can speculate that one of the primary reasons for this persistence

is that a bank's major asset is its reputation, which generally appreciates over time, but further research is needed in this direction. Moreover, although I provide evidence of a particular channel through which local banks may affect income, Schumpeterian growth, other channels may be operating simultaneously.

While using Italy as a natural laboratory to study the effects of local banks on economic development provides several advantages, a study based on information from a single country may lack external validity. In particular, in countries characterized by more developed stock markets, local banks might not be as important in fostering economic development because other means of financing are available. I address this concern in Table A.4 in the online appendix by examining how stock market capitalization compares with the total credit provided to privates by the banking sector in all upper-middle income countries for which these data are available. The ratio of these two quantities is relatively low for Italy but is not particularly different from the sample median; the ratio for Italy is very similar to that for countries such as Germany, China, Spain, and Japan but less than a fourth of that for Russia and the US. These comparisons should provide confidence that my results have external validity beyond Italy, at least to a large number of developed economies<sup>39</sup>.

My findings do not imply that contemporary banking institutions are predetermined by local historical events and that they cannot be changed. This paper belongs to a substantial body of empirical literature on the long-term effects of historical events, which has occasionally been criticized for being defeatist<sup>40</sup>. This is not my point of view. I emphasize Jewish demography as one of the many factors affecting Italian local financial institutions; because it is arguably exogenous, it is useful as an instrument for isolating the effects of banks on development. My interpretation of the results of this paper is that improvements in financial institutions may substantially benefit the economic environment. However, as is common in this stream of literature, this paper is silent on the amount of time required for high-quality institutions to affect development and the persistence of this effect over time. Both points are clearly relevant for both economists and policy makers and are part of my future research agenda.

---

<sup>39</sup>As further confidence in the results, Italy comprises regions that are characterized by very different historical backgrounds and degrees of economic development. The effects of local banks on economic development have been tested on different subsamples in Italy, excluding the Kingdom of Naples (see, for instance, Tables 7 and 8). At the 5 percent confidence level, I cannot rule out the possibility that the effect is uniform across all the subsamples. Further, in an unreported table, all regressions in the paper were replicated for the years 2000 and 2001, and the findings are unchanged.

<sup>40</sup>For instance, The-Economist (2011) dismisses the argument advanced by Putnam (1993) and Guiso, Sapienza and Zingales (2008) that the level of social capital in Italian municipalities has been highly persistent over time and that it originates from the types of government in the Middle Ages by arguing that "it quickly becomes defeatist. If Italy's problems really date back to the political vacuum created by the collapse of the Roman Empire [...], then perhaps it is time to give up and sip Campari soda on the Amalfi coast instead".

## References

- Acemoglu, D., S. Johnson, and J. A. Robinson (2001). The colonial origins of comparative development: An empirical investigation. *American Economic Review* 91(5), 1369–1401.
- Alesina, A., P. Giuliano, and N. Nunn (2013). On the origins of gender roles: Women and the plough. *The Quarterly Journal of Economics* 128(2), 469–530.
- Alesina, A. and E. La Ferrara (2005). Ethnic diversity and economic performance. *Journal of Economic Literature* 43(3), 762–800.
- Alessandrini, P., A. Presbitero, and A. Zazzaro (2009). Banks, distances and firm’s financing constraints. *Review of Finance* 13(2), 261–307.
- Angelini, P. and N. Cetorelli (2003). The effects of regulatory reform on competition in the banking industry. *Journal of Money, Credit and Banking* 35(5), 663–84.
- Arellano, M. and S. Bond (1991). Some tests of specification for panel data: Monte carlo evidence and an application to employment equations. *Review of Economic Studies* 58(2), 277–97.
- Banfield, E. C. (1958). *The moral basis of a backward society*. The Free Press.
- Beloch, K. J. (1937). *Bevolkungsgeschichte Italiens*. Walter de Gruyter Press.
- Bencivenga, V. R. and B. D. Smith (1991). Financial intermediation and endogenous growth. *Review of Economic Studies* 58(2), 195–209.
- Benfratello, L., F. Schiantarelli, and A. Sembenelli (2008). Banks and innovation: Microeconomic evidence on italian firms. *Journal of Financial Economics* 90(2), 197–217.
- Blundell, R. and S. Bond (1998). Initial conditions and moment restrictions in dynamic panel models. *Journal of Econometrics* 87(1), 115–143.
- Blundell, R. and S. Bond (2000). Gmm estimation with persistent panel data: an applications to production functions. *Econometric Reviews* 19(3), 115–143.
- Bofondi, M. and G. Gobbi (2004). Bad loans and entry into local credit markets. Working Papers 509, Bank of Italy.
- Bonaccorsi di Patti, E. and G. Dell’Ariccia (2004). Bank competition and firm creation. *Journal of Money, Credit and Banking* 36(2), 225–51.

- Bonfil, R. (1991). *Jewish life in Renaissance Italy*. University of California Press.
- Botticini, M. (2000). A tale of benevolent governments: Private credit markets, public finance, and the role of jewish lenders in medieval and renaissance italy. *The Journal of Economic History* 60(1), 164–189.
- Botticini, M. and Z. Eckstein (2005). Jewish occupational selection: Education, restrictions, or minorities? *The Journal of Economic History* 65(4), 922–948.
- Botticini, M. and Z. Eckstein (2007). From farmers to merchants, conversions and diaspora: Human capital and jewish history. *Journal of the European Economic Association* 5(4), 885–926.
- Comin, D., W. E. and E. Gong (2010). Was the wealth of nations determined in 1000 bc? *American Economic Journal: Macroeconomics* 2(3), 65–97.
- De Maddalena, A. (1975). Uomini e monete preindustriali: Personaggi in cerca d'autore. *Rivista Storica Italiana* 87, 235–244.
- Diamond, D. W. (1996). Financial intermediation as delegated monitoring: a simple example. *FRB Richmond Economic Quarterly* 82(3), 51–66.
- Durante, R. (2009). Risk, cooperation and the economic origins of social trust: an empirical investigation. Working Papers 25887, University Library of Munich.
- Engerman, S. L. and K. L. Sokoloff (1994). Factor endowments: Institutions, and differential paths of growth among new world economies: A view from economic historians of the us. Working Papers 66, NBER.
- Epstein, S. R. (1992). *An Island for Itself*. Cambridge University Press.
- Felice, E. (2005). Il valore aggiunto regionale: Una stima per il 1891 e per il 1911 e alcune elaborazioni di lungo periodo. *Rivista di Storia Economica* 21(3), 273–314.
- Felloni, G. (2011). The primacy of italian finance from the middle ages to early modern times. mimeo.
- Fry, M. J. (1995). *Money, interest, and banking in economic development*. John Hopkins University Press.
- Greenwood, J. and B. Jovanovic (1989). Financial development, growth, and the distribution of income. Working Papers 3189, NBER.
- Guiso, L., P. Sapienza, and L. Zingales (2004). Does local financial development matter? *The Quarterly Journal of Economics* 119(3), 929–969.
- Guiso, L., P. Sapienza, and L. Zingales (2006). The cost of banking regulation. Working Papers 5864, CEPR.

- Guiso, L., P. Sapienza, and L. Zingales (2008). Long term persistence. Working Papers 14278, NBER.
- Ingram, K. (2009). *The conversos and moriscos in late medieval spain and beyond*. Brill Academic Publishers.
- Jayaratne, J. and P. E. Strahan (1996). The finance-growth nexus: Evidence from bank branch deregulation. *The Quarterly Journal of Economics* 111(3), 639–70.
- Kamen, H. (1998). The mediterranean and the expulsion of spanish jews in 1492. *The Past and the Present Society* 119, 39–55.
- King, R. G. and R. Levine (1993a). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics* 108(3), 717–37.
- King, R. G. and R. Levine (1993b). Finance, entrepreneurship and growth: Theory and evidence. *Journal of Monetary Economics* 32(3), 513–542.
- La Porta, R., F. Lopez-de Silanes, A. Shleifer, and R. W. Vishny (1997). Legal determinants of external finance. *Journal of Finance* 52(3), 1131–1150.
- La Porta, R., F. Lopez-de Silanes, A. Shleifer, and R. W. Vishny (1998). Law and finance. *Journal of Political Economy* 106(6), 1113–1155.
- Lagumina, B. and G. Lagumina (1992). *Codice Diplomatico dei Giudei di Sicilia e Palermo: 1884-1890*. Edizioni Sellerio.
- Lerner, J. (1995). Venture capitalists and the oversight of private firms. *Journal of Finance* 50(1), 301–18.
- Levine, R. (1998). The legal environment, banks, and long-run economic growth. *Journal of Money, Credit and Banking* 30(3), 596–613.
- Levine, R. (1999). Law, finance, and economic growth. *Journal of Financial Intermediation* 8, 8–35.
- Levine, R. (2005). *Finance and Growth: Theory and Evidence*. Elsevier.
- Levine, R., N. Loayza, and T. Beck (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics* 46(1), 31–77.
- Lucchetti, R., L. Papi, and A. Zazzaro (2001). Banks’ inefficiency and economic growth: A micro-macro approach. *Scottish Journal of Political Economy* 48(4), 400–424.
- Malanima, P. (1998). Italian cities 1300-1800. a quantitative approach. *Rivista di Storia Economica* 14(2), 92–126.



- Meneghin, V. (1986). *I Monti di Pietà' in Italia dal 1462 al 1562*. LIEF Edizioni.
- Menning, C. B. (1993). *Charity and state in late Renaissance Italy: the Monte di Pietà' of Florence*. Cornell University Press.
- Milano, A. (1963). *Storia degli Ebrei in Italia*. Giulio Einaudi Editore.
- Montanari, D. (Ed.) (1999). *Monti di Pietà' e presenza ebraica in Italia*. Bulzoni Editore.
- Morelli, L. (2008). Guilds reappraised: Italy in the early modern period. *International Review of Social History* 53(S16), 159–178.
- North, D. (1981). *Structure and Change in Economic History*. Norton, New York.
- North, D. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge University Press.
- North, D. and R. Thomas (1973). *The Rise of the Western World*. Cambridge University Press.
- Nunn, N. (2009). The importance of history for economic development. *Annual Review of Economics* 1(1), 65–92.
- Nunn, N. and L. Wantchekon (2011). The slave trade and the origins of mistrust in Africa. *American Economic Review* 101(7), 3221–52.
- Olley, G. S. and A. Pakes (1996). The dynamics of productivity in the telecommunications equipment industry. *Econometrica* 64(6), 1263–97.
- Pagliuzzi, P. and N. Nicosia (1968). Monte di soccorso. *Novissimo Digesto Italiano* 10, 889–890.
- Percoco, M. (2009). History, geography and economies of agglomeration: Evidence from Italian cities. *mimeo*.
- Peri, I. (1988). *Restaurazione e Pacifico Stato di Sicilia 1377-1501*. Laterza.
- Pertile, A. (1895). *Storia del diritto italiano*, Volume 4. Unione Tipografica Editrice.
- Petersen, M. A. and R. G. Rajan (2002). Does distance still matter? the information revolution in small business lending. *Journal of Finance* 57(6), 2533–2570.
- Placanica, A. (1982). *Moneta, prestiti, usure nel Mezzogiorno moderno*. Società Editrice Napoletana, Napoli.
- Putnam, R. (1993). *Making democracy work. Civic Traditions in Modern Italy*. The Princeton Press.
- Racine, P. (2004). *Dal Monte di Pietà' alla Cassa di Risparmio: l'Esempio Piacentino*, Volume Politiche del credito. Investimento consumo solidarietà. TSG.

- Rajan, R. G. and L. Zingales (1998). Financial dependence and growth. *American Economic Review* 88(3), 559–86.
- Ruiz-Martin, F. (1949). La expulsión de los judíos del reino de nápoles. *Hispania* 9, 28–76; 179–240.
- Segre, R. (1978). Bernardino da feltre, i monti di pieta’ e i banchi ebraici. *Rivista Storica Italiana* (90), 818–833.
- Shulvass, M. A. (1973). *The Jews in the world of the Renaissance*. Leiden.
- Simonsohn, S. (2006). *The Jews in Sicily*, Volume 8. Leiden.
- Spolaore, E. and R. Wacziarg (2009). The diffusion of development. *The Quarterly Journal of Economics* 124(2), 469–529.
- The-Economist (2011). The wonders of commune-ism.
- Van-Beveren, I. (2010). Total factor productivity estimation: a practical review. *Journal of Economic Surveys* 10, 215–33.
- Zamagni, V. (2005). *L’Eta’ Contemporanea*. Marsilio Editori.

Table 1: Summary Statistics for the Samples Used in Estimation

<b>PANEL A</b>						
City level data (historical)						
	<i>Mean</i>	<i>Median</i>	Standard <i>Deviation</i>	<i>Min</i>	<i>Max</i>	<i>N</i>
Small Jewish Community	0.28	0.00	0.45	0.00	1.00	360
Medium Jewish Community	0.13	0.00	0.34	0.00	1.00	360
Large Jewish Community	0.07	0.00	0.25	0.00	1.00	360
Monte di Pietà (1470-1570)	0.29	0.00	0.45	0.00	1.00	360
Jewish Pawnshop	0.33	0.00	0.47	0.00	1.00	360
Population 1300	6.06	0.00	13.98	0.00	150.00	360
Population 1400	2.72	0.00	8.99	0.00	100.00	360

<b>PANEL B</b>						
City level data						
	<i>Mean</i>	<i>Median</i>	Standard <i>Deviation</i>	<i>Min</i>	<i>Max</i>	<i>N</i>
GDP per Capita	17.47	17.48	6.01	5.58	36.75	720
Credit /GDP	0.71	0.57	0.61	0.02	4.85	720
Branches /Population	0.00051	0.00048	0.00025	0.00008	0.00128	720
Altimetry Min	95.49	43.50	119.97	-3.00	584.00	720
Altimetry Max	644.55	485.50	559.35	3.00	2,635.00	720
Altimetry Average	218.37	144.50	207.67	0.00	1,049.00	720
Seismicity	2.61	2.00	0.96	1.00	4.00	720
Sea	0.14	0.00	0.34	0.00	1.00	720
Close to Sea	0.10	0.00	0.30	0.00	1.00	720
river	0.47	0.00	0.50	0.00	1.00	720
Region Capital	0.05	0.00	0.22	0.00	1.00	720
City Area	126.66	93.00	128.79	2.00	1,499.00	720
Illiterate	0.02	0.02	0.02	0.00	0.09	720
Primary Education	0.25	0.24	0.03	0.17	0.34	720
Secondary Education	0.29	0.29	0.03	0.19	0.39	720
Upper-Secondary Education	0.26	0.26	0.04	0.15	0.37	720
Tertiary Education	0.08	0.07	0.03	0.03	0.18	720

<b>PANEL C</b>						
Firm level data: Amadeus database						
	<i>Mean</i>	<i>Median</i>	Standard <i>Deviation</i>	<i>Min</i>	<i>Max</i>	<i>N</i>
Sales	15900	3530	99700	13	6400000	92316
Net Value of Capital	3120	495	22500	1	2010000	92316
Wages	2230	585	11400	1	619000	92316
Cost of Intermediates	12200	2570	83000	11	6000000	92316
Employees	71.03	24.00	310.94	1	18100	76301

Panel A reports statistics on historical data. The sample is limited to the towns in Italy (excluding the islands) that had a population of at least 5000 people in 1861. Data on the size of Jewish demography refer to 1500 (source: Milano (1963)). Data on the presence in the municipality of a Monte di Pietà or a Jewish pawnshops refer to the years 1470-1570 (source: Montanari (1999) and Meneghin (1986)). Historical data on urban populations are expressed in thousands (source: Malanima (1998)). In Panel B, "GDP per Capita" is the per-capita value added in the "local labor system" to which the municipality belongs, expressed in thousands of euros (source: INSTAT). "Credit/GDP" is the ratio of claims on nonfinancial private sector to GDP in the municipality (source: Bank of Italy). "Branches/Population" is the ratio of the number of bank branches to residents (source: Bank of Italy). Altimetry is expressed in meters (source: ISTAT). "Sea" is a dummy that identifies cities that are located on the coast; "Close to Sea" is a dummy that identifies cities that are less than 5 miles from the sea; and "River" is a dummy that identifies cities that are crossed by a major river. "Region Capital" is a dummy variable that is equal to one if the city is the capital of its region (year 2002). "City Area" is the extension of the municipality in square meters (year 1991). Panel C reports statistics for the Amadeus firm-level data in the year 2000. "Sales", "Net value of capital", and "Wages" are expressed in thousands of euros.

Table 2: Long-term persistence

PANEL A	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Jewish Pawnshop				Monte di Pietà		Credit/GDP		Branch Density		LGDP	
JEW	0.0696	0.0597*	0.349***	0.267***								
(small)	(0.0605)	(0.0472)	(0.0825)	(0.0706)								
JEW	0.0344	-0.0146	0.550***	0.494***								
(medium)	(0.0707)	(0.0658)	(0.0843)	(0.0760)								
JEW	0.116	0.129	0.376***	0.340***								
(large)	(0.118)	(0.114)	(0.134)	(0.0943)								
Jewish Pawnshop					0.527***	0.492***						
					(0.0663)	(0.0852)						
Monte di Pietà							0.434***	0.489***	0.187***	0.108***		
							(0.0684)	(0.0660)	(0.0361)	(0.0329)		
Credit /GDP											0.103***	
											(0.0156)	
Branch Density												0.233**
												(0.0393)
PROV. D.	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	NO
YEAR D.	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES
r2	0.0157	0.0174	0.178	0.188	0.272	0.223	0.120	0.144	0.0795	0.0393	0.103	0.131
N	190	190	170	170	170	170	336	336	340	340	336	340
SAMPLE	Kingdom of Naples		Italy excluding Kingdom of Naples									

The table reports OLS estimates. The unit of observation is municipality in columns 1-6 and municipality-year in columns 7-12. Jewish Pawnshop is a dummy variable that is equal to one if the municipality hosted at least one Jewish pawnshop between 1470 and 1570. JEW is a dummy that identifies those municipalities that hosted any kind of Jewish community in 1500. JEW(small), JEW(medium) and JEW(large) are dummy variables equal to one if the municipality hosted respectively a small, a medium or a large Jewish community in 1500. Monte di Pietà is a dummy variable that is equal to one if the municipality hosted at least one Monte di Pietà between 1470 and 1570. Estimates in columns 7-12 refers to the years 2002-2003. Credit/GDP is the log ratio of claims on nonfinancial private sector to GDP in the municipality; Branch Density is the log ratio of the number of bank branches to total residents in the municipality; LGDP is the log of GDP per capita in the "local labor system" to which the municipality belongs. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Standard errors are reported in parentheses are two-way clustered (municipality and year). \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

Table 3: Difference in difference

		Jewish community in 1500	
		No	Yes
STAY in 1504	No	$Y_{00}$	$Y_{01}$
	Yes	$Y_{10}$	$Y_{11}$

Table 4: Jewish communities in the Renaissance and current economic development

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP
JEW	0.0271 (0.0302)	0.0267 (0.0302)	0.00476 (0.0299)	0.00992 (0.0294)	0.0104 (0.0297)	0.00830 (0.0269)	0.0283 (0.0302)	0.0238 (0.0312)
JEW*STAY	0.106*** (0.0395)	0.0526 (0.05)	0.112*** (0.0381)	0.0836** (0.0372)	0.0651* (0.0385)	0.0846** (0.0372)	0.136*** (0.0419)	0.170*** (0.0533)
JEW*STAY*MONTE		0.0789** (0.0402)						
STAY	0.0931** (0.0418)	0.129*** (0.0498)	0.0846* (0.0448)	0.121** (0.0409)	0.111** (0.0446)	0.138** (0.0616)	0.0751* (0.0422)	0.100** (0.0485)
AREA			0.000307*** (0.0000834)					
CAPITAL				0.298** (0.0326)				
POP1300					0.00384** (0.00156)			
POP1400					-0.000414 (0.00263)			
GEO. CHARACT.	YES	YES	YES	YES	YES	YES	YES	YES
PROVINCE DUM.	YES	YES	YES	YES	YES	YES	YES	YES
YEAR DUM.	YES	YES	YES	YES	YES	YES	YES	YES
EDUCATION	NO	NO	NO	NO	NO	YES	YES	NO
r2	0.115	0.119	0.132	0.168	0.142	0.287	0.125	0.391
N	720	720	720	720	720	720	660	160
Sample	Italy						Italy excluding Duchy of Milan	Central Italy

The table reports OLS estimates for the years 2002-2003. The unit of observation is municipality-year. The left-hand side variable, LGDP is the log of GDP per capita in the "local labor system" to which the municipality belongs. JEW is a dummy variable that is equal to one if the municipality hosted a Jewish community in 1500. STAY is a dummy that is equal to one if the municipality did not belong to the Kingdom of Naples in 1503. MONTE is a dummy that is equal to one if the municipality hosted a Monte di Pietà between 1470 and 1570. AREA is the extension of the municipality in square meters (data refer to 1991). CAPITAL is a dummy that is equal to one if the city is the capital of the region. POP1300 and POP1400 are the estimated urban population in the municipality in 1300 and in 1400, respectively. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity (as reported by the Italian National Statistical Institute) and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. Controls for education are the illiteracy rate and the percentage of residents who completed primary, secondary and undergraduate education. Standard errors (reported in parentheses) are two-way clustered (municipality and year). \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

Table 5: Jewish communities in the Renaissance and current economic development

	(1)	(2)	(3)	(4)	(5)
	LGDP	LGDP	LGDP	LGDP	LGDP
JEW	0.0157 (0.0450)	0.0592 (0.0410)	0.0513 (0.0327)	0.0308 (0.0322)	0.0304 (0.0302)
JEW*STAY	0.189*** (0.0615)	0.157*** (0.0582)	0.151*** (0.0542)	0.188*** (0.0464)	0.146*** (0.0417)
STAY	0.0661 (0.0561)	0.126** (0.0544)	0.0829 (0.0541)	0.0359 (0.0465)	0.0688 (0.0431)
GEO. CHARACTER.	YES	YES	YES	YES	YES
PROVINCE DUM.	YES	YES	YES	YES	YES
YEAR DUM.	YES	YES	YES	YES	YES
r <sup>2</sup>	0.293	0.265	0.169	0.171	0.118
N	166	250	382	526	662
Sample	Distance Border Kingdom of Naples<				
	100km	150km	250km	350km	450km

The table reports OLS estimates for the years 2002-2003. The unit of observation is municipality-year. The left-hand side variable, LGDP is the log of GDP per capita in the "local labor system" to which the municipality belongs. JEW is a dummy variable that is equal to one if the municipality hosted a Jewish community in 1500. STAY is a dummy that is equal to one if the municipality did not belong to the Kingdom of Naples in 1503. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity, and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. Standard errors (reported in parentheses) are two-way clustered (municipality and year). \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

Table 6: Banks and local economic development

<b>PANEL A</b>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP
Credit/GDP	0.223*** (0.0782)	0.256*** (0.0698)	0.251*** (0.0616)	0.256*** (0.0546)	0.259*** (0.0537)	0.262*** (0.0518)			
Branch Density							0.680*** (0.251)	1.254*** (0.431)	1.236*** (0.381)
GEOGRAPHY	NO	NO	YES	NO	NO	YES	NO	NO	YES
PROV. DUM.	NO	YES	YES	NO	YES	YES	NO	YES	YES
YEAR DUM.	YES	YES	YES	YES	YES	YES	YES	YES	YES
archi2p	3.19e-3	4.41e-6	2.48e-7	6.07e-7	2.03e-9	3.19e-10	1.39e-3	6.47e-7	2.90e-9
sarganp				0.161	0.258	0.519			
F	18.16	33.16	41.31	14.32	20.40	21.53	8.990	9.354	12.12
N	336	336	336	336	336	336	340	340	340
SAMPLE	Italy excluding Kingdom of Naples								
<b>PANEL B</b>									
JEW	0.292*** (0.0682)	0.385*** (0.0600)	0.437*** (0.0603)				0.109*** (0.0363)	0.0889*** (0.0261)	0.102*** (0.0259)
JEWsmall				0.143* (0.0736)	0.244*** (0.0631)	0.286*** (0.0662)			
JEWmedium				0.435*** (0.0952)	0.549*** (0.0798)	0.566*** (0.0782)			
JEWlarge				0.686*** (0.122)	0.729*** (0.104)	0.729*** (0.101)			
r2	0.0517	0.109	0.199	0.115	0.185	0.257	0.0260	0.0329	0.126

The table reports 2SLS estimates for the years 2002-2003. The unit of observation is municipality-year. The sample is limited to municipalities that did not belong to the Kingdom of Naples in 1503. Panel A reports the second-stage estimates. The left hand side variable, LGDP is the log of GDP per capita in the "local labor system" to which the municipality belongs. Credit/GDP is the log ratio of claims on nonfinancial private sector to GDP in the municipality, whereas Branch Density is the log ratio of the number of bank branches to total residents in the municipality. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity, and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. Sarganp reports the p-value of the Hansen-Sargan overidentification test. Archi2p reports the p-value of the Anderson-Rubin test (the null hypothesis is that the coefficients of the excluded instruments are jointly equal to zero). F is the F statistics for weak identification. Panel B reports the first-stage estimates. To save space, only the coefficients of the excluded instruments are reported. JEW is a dummy that identifies those municipalities that hosted a Jewish community in 1500. JEWsmall, JEWmedium and JEWlarge are dummy variables that are equal to one if the municipality hosted a small, medium or large Jewish community, respectively, in 1500. Standard errors are reported in parentheses. \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

Table 7: Banks and local economic development (Robustness checks)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP
Cred./GDP	0.244*** (0.0719)	0.211*** (0.0730)	0.188** (0.0957)				0.424** (0.117)		0.366*** (0.118)		0.181** (0.0672)	
Branch Density				1.158*** (0.435)	1.050** (0.409)	0.860** (0.400)		1.407** (0.441)		1.194*** (0.411)		0.582** (0.176)
AREA	0.00466 (0.0121)			0.0104 (0.000160)								
CAPITAL		0.0124* (0.00690)			0.0134 (0.00855)							
POP1300			0.0940 (0.209)			0.0204 (0.272)						
POP1400			0.0876 (0.271)			0.0287 (0.363)						
GEOGR.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROV. D.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR D.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	336	336	336	340	340	340	276	280	138	142	138	142
SAMPLE	Italy excluding Kingdom of Naples						Italy exclud. Kingdom of Naples and Duchy Milan		Central Italy exclud. Kingdom of Naples		Papal State	

The table reports 2SLS estimates for the years 2002-2003. The unit of observation is municipality-year. Panel A reports the second-stage estimates. The left-hand side variable, LGDP is the log of GDP per capita in the "local labor system" to which the municipality belongs. Credit/GDP is the log ratio of claims on nonfinancial private sector to GDP in the municipality, whereas Branch Density is the log ratio of the number of bank branches to total residents in the municipality. AREA is the extension of the municipality expressed in square meters (data refer to 1991). CAPITAL is a dummy variable that is equal to one if the city is the capital of the region. POP1300 and POP1400 are the estimated urban population in the municipality in 1300 and 1400, respectively. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity, and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. Standard errors are reported in parentheses. \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

Table 8: Banks and local economic development (Robustness checks)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP
Credit/GDP	0.186** (0.0774)	0.281*** (0.0974)	0.447*** (0.164)	0.407*** (0.0993)	0.250*** (0.0544)					
Branch Density						0.598*** (0.187)	0.895*** (0.261)	1.731** (0.807)	1.430*** (0.438)	1.392*** (0.404)
GEOGRAPHY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROV. DUM.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR DUM.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	80	104	152	200	278	84	108	156	204	282
SAMPLE	Cities in Kingdom of Naples are excluded Distance border Kingdom of Naples <									
	100	150	250	350	450	100	150	250	350	450

The table reports 2SLS estimates for the years 2002-2003. The unit of observation is municipality-year. The left-hand side variable, LGDP is the log of GDP per capita in the "local labor system" to which the municipality belongs. Credit/GDP is the log ratio of claims on nonfinancial private sector to GDP in the municipality, whereas Branch Density is the log ratio of the number of bank branches to total residents in the municipality. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity, and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. Standard errors are reported in parentheses. \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.



Table 9: Long-term persistence of local financial institutions

<b>PANEL A</b>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Credit/GDP		Branch Density		Credit/GDP	Branch Density	Credit/GDP	Branch Density
Monte di Pietà	1.250*** (0.199)	0.828*** (0.187)	0.281*** (0.0755)	0.240*** (0.0834)	1.211*** (0.280)	0.376*** (0.112)	1.480*** (0.438)	0.489*** (0.179)
POP1300		-0.00534 (0.00566)		-0.00128 (0.00263)				
POP1400		0.0191** (0.00769)		0.00302 (0.00360)				
GEOGRAPHY	YES	YES	YES	YES	YES	YES	YES	YES
PROV. DUM.	YES	YES	YES	YES	YES	YES	YES	YES
YEAR DUM.	YES	YES	YES	YES	YES	YES	YES	YES
archi2p	4.13e-13	5.18e-6	1.54e-5	8.81e-6	135e-6	242e-4	2.73e-3	1.35e-3
F	42.39	38.07	48.70	43.55	21.52	27.98	10.59	14.90
N	336	336	340	340	276	280	138	142
SAMPLE	Italy excluding Kingdom of Naples				Italy excluding Kingdom of Naples and Duchy of Milan		Central Italy excluding Kingdom of Naples	

<b>PANEL B</b>								
JEW	0.350*** (0.0476)	0.344*** (0.0493)	0.362** (0.0460)	0.354** (0.0475)	0.278*** (0.0527)	0.304*** (0.0506)	0.302*** (0.0824)	0.334** (0.0771)
r2	0.170	0.279	0.176	0.285	0.131	0.134	0.202	0.214

The table 2SLS estimates for the years 2002-2003. The unit of observation is municipality-year. Panel A reports the second-stage estimates. The left hand side variables are Credit/GDP, the log ratio of claims on nonfinancial private sector to GDP in the municipality, and Branch Density, the log ratio of the number of bank branches to total residents in the municipality. Monte di Pietà is a dummy variable that is equal to one if the municipality hosted a Monte di Pietà between 1470 and 1570. POP1300 and POP1400 are the estimated urban population in the municipality in 1300 and 1400, respectively. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity, and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. Archi2p reports the p-value of the Anderson-Rubin test (the null hypothesis is that the coefficients of the excluded instruments are jointly equal to zero). F is the F statistics for weak identification. Panel B reports the first-stage estimates. To save space, only the coefficients of the excluded instruments are reported. JEW is a dummy that identifies those municipalities that were hosting a Jewish community in 1500. Standard errors are reported in parentheses. \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

Table 10: Banks and local aggregate productivity - Manufacturing

	(1)	(2)	(3)	(4)	(5)	(6)
	LTFP	LTFP	REALLOC	REALLOC	TECHNL	TECHNL
Credit/GDP	0.0499*** (0.0149)		0.0351*** (0.0133)		0.0149** (0.00664)	
Branch Density		0.496* (0.264)		0.302* (0.178)		0.108* (0.0595)
GEO. CHARACT.	YES	YES	YES	YES	YES	YES
PROVINCE DUM.	YES	YES	YES	YES	YES	YES
YEAR DUM.	YES	YES	YES	YES	YES	YES
N	220	220	220	220	220	220
SAMPLE	Italy excluding Kingdom of Naples - Manufacturing firms					

The table reports 2SLS estimates for the years 2000-2001. The unit of observation is municipality-year. The sample is limited to municipalities that did not belong to the Kingdom of Naples in 1503. LTFP is a measure of aggregate productivity in the Local Labor System (LLS) to which the municipality belongs. It is computed as the weighted average productivity of the firms operating in manufacturing in the LLS, using as weights their shares of total value added. TECHN is the unweighted average of the firms' productivities. REALLOC is the difference between LTFP and TECHN. Credit/GDP is the log ratio of claims on nonfinancial private sector to GDP in the municipality and Branch Density is the log ratio of the number of bank branches to total residents in the municipality. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity, and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. The excluded instrument is a dummy variable that identifies those municipalities that were hosting a Jewish community in 1500. Standard errors (reported in parentheses) are two-way clustered (municipality and year). \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

Table 11: Banks and local aggregate productivity - Construction

	(1)	(2)	(3)	(4)	(5)	(6)
	LTFP	LTFP	REALLOC	REALLOC	TECHNL	TECHNL
Credit/GDP	0.0600*** (0.0170)		0.0348*** (0.0124)		0.0252*** (0.00772)	
Branch Density		0.687** (0.317)		0.483** (0.221)		0.204* (0.107)
GEO. CHARACT.	YES	YES	YES	YES	YES	YES
PROVINCE DUM.	YES	YES	YES	YES	YES	YES
YEAR DUM.	YES	YES	YES	YES	YES	YES
N	216	216	216	216	216	216
SAMPLE	Italy excluding Kingdom of Naples - Firms operating in Construction					

The table reports 2SLS estimates for the years 2000-2001. The unit of observation is municipality-year. The sample is limited to municipalities that did not belong to the Kingdom of Naples in 1503. LTFP is a measure of aggregate productivity in the Local Labor System (LLS) to which the municipality belongs. It is computed as the weighted average productivity of the firms operating in construction in the LLS, using as weights their shares of total value added. TECHN is the unweighted average of the firms' productivities. REALLOC is the difference between LTFP and TECHN. Credit/GDP is the log ratio of claims on nonfinancial private sector to GDP in the municipality and Branch Density is the log ratio of the number of bank branches to total residents in the municipality. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity, and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. The excluded instrument is a dummy variable that identifies those municipalities that were hosting a Jewish community in 1500. Standard errors (reported in parentheses) are two-way clustered (municipality and year). \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

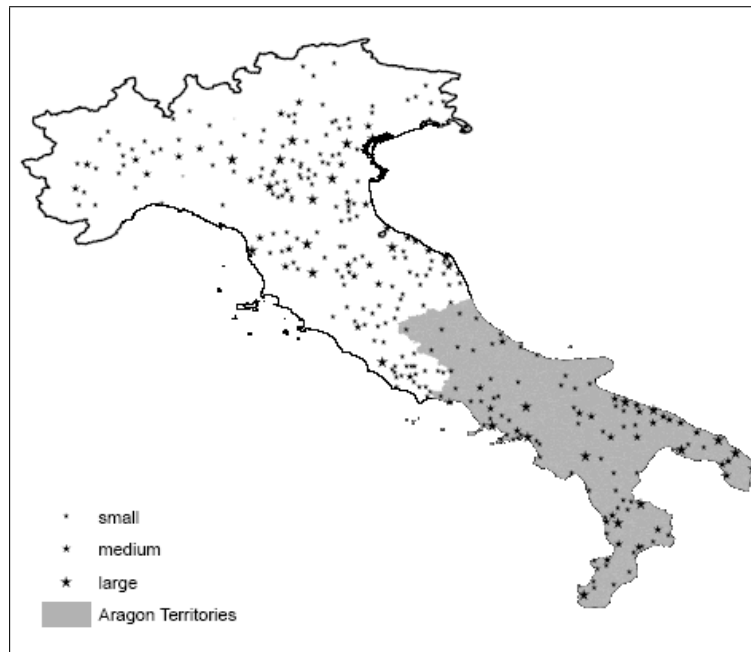


Figure 1: Jewish Communities in 1500 A.D. (excluding the islands)

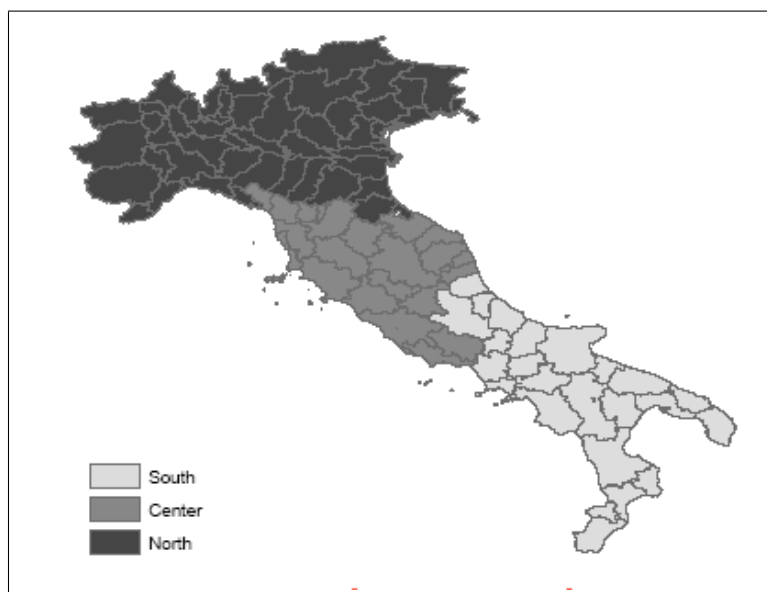


Figure 2: Italian Provinces and Macro-Regions (excluding the islands)

## A Appendix (not for publication)



Figure A.1: Italian States in 1500 A.D.



Figure A.2: The sermon of Saint Giovanni da Capestrano, Historisches Museum.



Figure A.3: Monte di Pietà di Bologna

Table A.1: Jewish communities in the Renaissance and current economic development

	(1)	(3)	(4)	(5)	(6)
	LGDP	LGDP	LGDP	LGDP	LGDP
JEW	0.0283 (0.0302)	0.00743 (0.0298)	0.0121 (0.0294)	0.0133 (0.0297)	0.0121 (0.0270)
JEW*STAY	0.136** (0.0419)	0.141** (0.0404)	0.116** (0.0403)	0.109** (0.0412)	0.125** (0.0409)
STAY	0.0751* (0.0422)	0.0672 (0.0444)	0.0998** (0.0412)	0.0869** (0.0440)	0.0941 (0.0572)
AREA		0.000287** (0.0000833)			
CAPITAL			0.279** (0.0336)		
POP1300				0.00280* (0.00147)	
POP1400				0.00126 (0.00273)	
GEO. CHARACT.	YES	YES	YES	YES	YES
PROVINCE DUM.	YES	YES	YES	YES	YES
YEAR DUM.	YES	YES	YES	YES	YES
EDUCATION	NO	NO	NO	NO	YES
r2	0.125	0.141	0.171	0.141	0.285
N	660	660	660	660	660
Sample	Italy excluding Duchy of Milan				

The table reports OLS estimates for the years 2002-2003. The unit of observation is municipality-year. The left-hand side variable, LGDP is the log of GDP per capita in the "local labor system" to which the municipality belongs. JEW is a dummy variable that is equal to one if the municipality hosted a Jewish community in 1500. STAY is a dummy equal to one if the municipality did not belong to the Kingdom of Naples in 1503. AREA is the extension of the municipality expressed in square meters (data refer to 1991). CAPITAL is a dummy variable that is equal to one if the city is the capital of the region. POP1300 and POP1400 are the estimated urban population in the municipality in 1300 and 1400 respectively. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity, and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. Controls for education are the illiteracy rate and the percentage of residents who completed primary, secondary, and undergraduate education. Standard errors (reported in parentheses) are two-way clustered (municipality and year). \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

Table A.2: Jewish communities in the Renaissance and current banks

	(1)	(2)	(3)	(4)
	Credit/GDP	Credit/GDP	Credit/GDP	Credit/GDP
JEW	0.424** (0.0576)	0.109 (0.192)	-0.199 (0.229)	-0.472** (0.143)
JEW*STAY		0.465* (0.275)	0.576** (0.275)	0.494* (0.264)
STAY		-0.0954 (0.339)	-0.436* (0.242)	-0.118 (0.237)
GEOGRAPHY	YES	YES	YES	YES
YEAR DUM.	YES	YES	YES	YES
PROV. DUM.	YES	YES	YES	YES
r2	0.139	0.140	0.347	0.468
N	674	674	154	80
Sample	Italy		Central Italy	Lazio, Abruzzo, Molise

The table reports OLS estimates for the years 2002-2003. The unit of observation is municipality-year. The left-hand side variable, Credit/GDP, is the log ratio of claims on nonfinancial private sector to GDP in the municipality. JEW is a dummy variable that is equal to one if the municipality hosted a Jewish community in 1500. STAY is a dummy that is equal to one if the municipality did not belong to the Kingdom of Naples in 1503. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity, and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. Standard errors (reported in parentheses) are two-way clustered (municipality and year). \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

Table A.3: Banks and local economic development

<b>PANEL A</b>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP	LGDP
Credit/GDP	0.263** (0.0758)	0.428** (0.141)	0.424** (0.117)	0.279** (0.0537)	0.325** (0.0685)	0.354** (0.0706)			
Branch Density							0.719** (0.217)	1.512** (0.585)	1.407** (0.441)
GEOGRAPHY	NO	NO	YES	NO	NO	YES	NO	NO	YES
PROV. DUM.	NO	YES	YES	NO	YES	YES	NO	YES	YES
YEAR DUM.	YES	YES	YES	YES	YES	YES	YES	YES	YES
sarganp				0.406	0.483	0.667			
F	22.14	12.61	18.02	16.74	14.80	14.93	12.24	6.413	10.44
N	276	276	276	276	276	276	280	280	280
SAMPLE	All Italian cities excluding Kingdom of Naples and Duchy of Milan								

The table 2SLS estimates for the years 2002-2003. The unit of observation is the municipality. Panel A reports the second-stage estimates. The left-hand side variable, LGDP, is the log of GDP per capita in the "local labor system" to which the municipality belongs. Credit/GDP is the log ratio of claims on nonfinancial private sector to GDP in the municipality, whereas Branch Density is the log ratio of the number of bank branches over total residents in the municipality. The set of PROVINCE DUMMIES refers to the Italian provinces in 1992. Geographical variables are elevation of the municipality (minimum, maximum, average), seismicity, and three dummies for whether the city is located on the coast, close to the coast (less than 5 miles), or on a river. Sarganp reports the p-value of the Hansen-Sargan overidentification test. Archi2p reports the p-value of the Anderson-Rubin test (the null hypothesis is that the coefficients of the excluded instruments are jointly equal to zero). F is the F statistics for weak identification. Standard errors are reported in parentheses. \*\*\* significant at less than 1 percent; \*\* significant at 5 percent; \* significant at 10 percent.

Table A.4: The size of the stock market relative to the banking sector in developed countries

Uruguay	0.02	Romania	0.70
Slovak Republic	0.16	Japan	0.72
Tunisia	0.22	Lithuania	0.73
Latvia	0.23	Korea, Rep.	0.76
Austria	0.25	Serbia	0.80
Portugal	0.28	Poland	0.82
New Zealand	0.31	Belgium	0.84
Ecuador	0.32	United Kingdom	0.88
Panama	0.34	Israel	0.89
Costa Rica	0.35	France	0.90
Macedonia	0.35	Greece	0.95
Ireland	0.40	Canada	0.99
Bulgaria	0.42	Colombia	1.04
Denmark	0.43	Australia	1.13
Germany	0.43	Luxemburg	1.21
Slovenia	0.45	Malaysia	1.21
Italy	0.50	Sweden	1.31
Estonia	0.52	Turkey	1.32
Iceland	0.56	Brazil	1.45
China	0.57	Switzerland	1.51
Thailand	0.57	Mexico	1.66
Mauritius	0.59	Finland	1.89
Hungary	0.61	Russia	2.06
Spain	0.63	Peru	2.08
Iran	0.63	Chile	2.08
Norway	0.64	United States	2.34
Czech Republic	0.64	Argentina	2.75
Netherlands	0.66	South Africa	2.86

The table reports the average ratio between "Stock Market Capitalization to GDP" and "Bank private credit to GDP" between 2000 and 2010. Source: Global Financial Development Database, World Bank.